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ABSTRACT

This report describes national demographic and work force trends that have important implications for institutions and presents recommended management strategies for the 1990s. Among the trends predicted for the next 10 years are the following: (1) a continuing reduction in the traditional 18-24 year-old college-going population; (2) the increasing participation of women, minority and foreign students, and individuals over 35 years of age; (3) an increasing demand for a higher level of educational attainment from workers; (4) an increasing mobility of the work force and multiple career changes, as well as major dislocations in the work force through organizational changes; and (5) fierce international competition coupled with advances in technology and communications. It is suggested that higher education institutions need to push more responsibility downward toward teachers and students, help create a work force that makes the nation's economy more competitive and productive, and reexamine what quality education means from the perspective of the student learner and how quality relates to cost so that relative value can be determined. Four strategies emerge for colleges and universities: increase quality of services; increase use of technology and communications; increase labor productivity; and reduce costs. Contains 18 references. (GLR)

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YEARS OF CHALLENGE

THE IMPACT OF DEMOGRAPHIC AND WORK FORCE TRENDS ON HIGHER EDUCATION IN THE 1990s

National Association of
College and University Business Officers

U.S. DEPARTMENT OF EDUCATION
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Years of Challenge

The Impact of Demographic and Work Force Trends
On Higher Education in the 1990s

K. Scott Hughes
Carol Frances
Barbara J. Lombardo

A NACUBO Monograph

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Preface

Years of Challenge is intended to provide one frame of reference for the financial management concerns confronting colleges and universities in the 1990s. The importance of higher education as a national resource is growing as society and business enterprises require increased levels of skill and knowledge. More than ever before, America will draw on the education of its populace to maintain its productivity, its competitiveness, and its standard of living.

National demographic and work force trends are dramatically affecting postsecondary education. Much of the material in this monograph brings together information and concepts not previously consolidated. The authors are not attempting to advance a theory so much as to synthesize existing data, and then develop conclusions. While demographers and policy analysts have, for a long time, studied the impact of changing populations on college classrooms, much less attention has been paid to the impact of the changing needs of the work force on higher education. When the two trends are studied in tandem, it becomes apparent that fundamental structural changes are needed in America's higher education systems.

The National Academy of Sciences/National Research Council recently formed a Committee on Postsecondary Education and Training for the Workplace. The committee will address such key topics as program coordination, allocation of resources, student aid, the appropriate federal role in higher education, and program design. The committee expects to take nearly two years to arrive at a set of recommendations; their results are scheduled for early 1993. This underscores not only how important work force and demographic trends are, but also how complex the issues can be. *Years of Challenge* is one of the many starting places in the reevaluation of higher education.

This monograph is rich in quantitative data in the form of graphs and tables. The intent is for institutional presidents, trustees, legislators, business officers, budget analysts, and other policy makers to have useful source materials at their finger tips. In addition to the actual text of the monograph, the authors have included an *Executive Summary*, which

serves as a synopsis of the major points concerning work force and demographic trends and their relationship to higher education.

The material in this monograph was presented as key testimony to the U.S. House of Representatives' Subcommittee on Postsecondary Education in May 1991, supporting the reauthorization of the Higher Education Act of 1965. Congress is especially concerned about the challenging education and training demands of the work force in the 1990s.

The views expressed are those of the authors and represent one perspective of the complex and challenging higher education environment.

Executive Summary

THIS EXECUTIVE SUMMARY is a synopsis of the material contained in the main section of Years of Challenge. It is intended to be used as a broad overview by busy policy makers who may not have the time to read the entire monograph at their leisure. For a more in-depth analysis of the following points, please refer to the text of the monograph.

America is experiencing a cultural revolution in its higher education system. Not since the 1940s and the advent of the GI Bill of Rights has this country faced such a dramatic change in the very essence of its higher education capabilities.

What makes the 1990s such an exciting era for colleges and universities is the convergence of driving forces of change that will forever alter the current concept of higher education. The next ten years will see:

- The continuing reduction in the traditional 18–24 year-old college-going population
- The increasing participation of women
- The increasing participation of minorities and foreign students
- The increasing participation of individuals over 35, including retirees
- Continuing, striking shifts in state and regional populations

Coincident with these demographic shifts is America's transition from the industrial-based era into the information/service age, which will result in the following:

- An increased demand for a higher level of educational attainment from workers
- Major dislocations in the work force due to "downsizing," "rightsizing," and the emergence of flatter network organizations
- An increasing mobility of the work force and multiple career changes
- Fierce international competition for market share and productivity gains
- Advances in technology and communications, and a change in the concepts of work and education

These major cultural phenomena are drastically transfiguring America's higher education institutions. Many of these trends have been building for years, and even decades. As these trends evolve and intensify, higher education is placed in a position of both challenge and opportunity. The purpose of this report is to describe the demographic and work force trends with the most important and interesting implications for institutions. Conclusions are drawn regarding the set of circumstances facing higher education. The report ends with a group of recommended management strategies for the 1990s.

Demographic and work force trends will demand that higher education respond to certain issues. Among these issues are:

- The increased educational needs of women and minorities
- The increased domination of the economic market by the service industry, resulting in the need for workers with high-level communication skills, well-grounded analytical abilities, and a broad understanding of how elements interrelate within organizations
- The need to reeducate displaced workers due to corporate downsizing, productivity improvements, and corporate mergers and acquisitions

As many as 40 million people need increased postsecondary education services, estimated by the American Society for Training and Development to cost as much as $45.4 billion.

The U.S. work force faces major turbulence, which will intensify in the coming decade. While job opportunity will increase significantly in some fields and professions, it will decrease markedly in others. The knowledge and skills needed to succeed in the work force of the 1990s will continue to change as the transition from an industrial society to an expanding information/service-based society gains momentum.

The work force of the 1990s is expected to be characterized by the following decisive trends:

- Slowing growth in the labor force
- A shift in the composition of the work force toward women and minorities
- A high number of displaced workers
- Large variances in employment growth by sector and occupation
- Increased education attainment levels required by high-growth occupations

Together, these characteristics of the work force in the 1990s give higher education a crucial role in maintaining America's productivity. Indeed, because of its key responsibility in preparing the work force for the challenge of global competition, higher education can be considered this nation's new strategic industry.

Rate of growth in the labor force is projected to slow in the 1990s to the lowest rate since the turn of the century — just over 11 percent. Productivity gains will need to be achieved through greater emphasis on improving technical, professional, and managerial skills of existing workers. Education and training become increasingly important, since so many new entrants to the work force will be unprepared to meet the knowledge and productivity demands of the new jobs of the 1990s.

Sixty-eight percent of all new entrants to the labor force are projected to be women and minorities. This increase in women and minorities, combined with the exodus of white men, will have a dramatic impact on the composition of the work force in the 1990s. While white men represented 44 percent of the work force in 1988, they are expected to decrease to 39 percent of the work force by the year 2000.

Employment growth is expected to vary significantly by occupation in the 1990s. Some occupations will experience considerable employment growth between 1988 and 2000. For example, employment for computer analysts is projected to increase by 52 percent, from 503,000 jobs to 763,000 jobs.

At the same time, many occupations are expected to experience low — and in some cases, negative — growth. Employment for machine operators is projected to decrease by 3 percent, from 4.9 million jobs to 4.8 million jobs. Employment in agriculture, forestry, and fishery is projected to decrease by 5 percent, from 3.5 million jobs to 3.3 million jobs.

A correlation exists between those occupations expecting to experience growth and those that require a high level of educational attainment. For example, based on projections of current educational attainment levels, 64 percent of all employment opportunities for computer and math analysts will require four or more years of college. Computer and math analysts are projected to experience the greatest percentage growth in employment opportunities between 1988 and 2000. At the other extreme, in the field of machine operators (where, as has been shown, employment is decreasing), only 4 percent of the jobs require a college degree. Educational attainment required for jobs clearly is increasing. An estimated 23 percent of all jobs will require four or more years of college by the end of this century.

Finally, the wage gap between those with high school degrees and those with college degrees is widening. According to Frank Levy, a University of Maryland economist, in 1979 the average college graduate aged 25-34 earned 18 percent more than a high school graduate of the same age. By 1986 that gap had increased to 43 percent, and that gap can be expected to increase in the future.

Demographic and work force changes are making higher education leaders address the fundamental nature of their programs and services. To come to grips with these major challenges, higher education needs to:

- Push responsibility downward toward teachers and students; invite innovation and creativity; and encourage flexibility
- Help create a work force that makes the nation's economy more competitive and productive
- Reexamine what quality education means from the perspective of the student learner; and how quality relates to cost so that relative value can be determined

Higher education is coming under increased pressure to help create a work force that makes the nation's economy more competitive internationally. According to Clark Kerr, "the push by national economic and political leaders for higher education to make a greater contribution to U.S. industrial competitiveness will also intensify, leading to more and better skills training and more and better research, particularly in applied areas."

The work force and demographic trends are causing a paradigm shift in higher education, from its historic identity as a provider of a discrete learning experience for young people to a new identity as a provider of lifelong education to adults engaged in the work force.

In the new paradigm higher education is being viewed as an opportunity (and increasingly, a necessary one) to stay abreast of changing demands and shifts in society and the work place. The majority of higher education consumers are minorities and women who have been previously underrepresented in educational attainment and earning power in the work force. Attendance is becoming part-time, intermittent, and over most of one's adult life. Academic objectives include self-actualization as well as career development.

Along with this paradigm shift in higher education comes a new look at the quality of the service provided. Postsecondary education institutions need to emphasize the quality of the services they offer compared to the cost of these services.

"Quality" education in this context refers to the perceived value as defined by the learner. Features such as ease of scheduling, transportation, location, and impact on job qualifications, promotions, bonuses, and salary increases influence the learner's concept of quality educational services. Students may look for guarantees that colleges and universities can meet their educational needs. In response, colleges and universities may begin to offer warranties on their services, and even go so far as to offer "money-back guarantees" in which students pay tuition only upon evidence of their acquiring the knowledge and skills that they sought upon enrollment.

The demographic and work force influences in the 1990s continue to shape college and university teaching, support services, and management. In many ways the adjustment happens naturally, as the free market characteristics of supply and demand come together. For example, many community colleges offer instruction opportunities to employees under programs subsidized and sponsored by their employers.

As institutions adapt to take advantage of new education opportunities, four strategies are emerging. Colleges and universities should work to:

- Increase the quality of their services
- Increase their use of technology and communications
- Increase labor productivity and efficiency
- Reduce administrative and support costs

These new strategies are becoming the postsecondary education agenda for the new decade. The institutions that succeed in the coming years will be those that realign their services and redefine their product in response to the changing service demands of their students.

Introduction

America is experiencing a cultural revolution in its higher education system. Not since the 1940s and the advent of the GI Bill of Rights has this country faced such a dramatic change in the very essence of its higher education capabilities.

What makes the 1990s such an exciting era for colleges and universities is the convergence of driving forces of change that will forever alter the current concept of higher education. The next ten years will see:

- A continuing reduction in the traditional 18–24 year-old college-going population
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- The increasing participation of individuals over 35, including retirees
- Continuing, striking shifts in state and regional populations

Coincident with these demographic shifts is America's transition from the industrial-based era into the information/service age, which will result in the following:

- An increasing demand from the labor force for a higher level of educational attainment from its workers
- Major dislocations in the work force due to "downsizing," "rightsizing," and the emergence of flatter network organizations
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These major cultural phenomena are drastically transfiguring America's higher education institutions. Many of these trends have been building for years, and even decades. As these trends evolve and intensify, higher education is placed in a position of both challenge

and opportunity. The purpose of this report is to describe the demographic and work force trends with the most important and interesting implications for institutions of higher education. Conclusions are drawn regarding the set of circumstances facing higher education. The report ends with a group of recommended management strategies for the 1990s.

Major Demographic Changes Affecting Higher Education

HIGHER EDUCATION WAS ONCE THE BASTION of the young, the white, and the privileged. For years, however, this has been changing; today, the mosaic of higher education is more variegated and dynamic than ever.

Clark Kerr, president emeritus, the University of California, has stated that the 1990s will be a decade of major change or conflict for U.S. universities and colleges (figure 1). One major cause is the powerful demographic shifts that America is experiencing. Higher education has been most influenced by external factors such as population shifts, economic cycles, and public policy changes (figure 2).

This section of the monograph concentrates on the major demographic characteristics affecting demand for higher education services. These characteristics encompass statistics relating to the general population — race, age, gender, immigration, family status — and statistics relating to higher education specifically, including college enrollment and college-going rates. Four key observations emerge which, collectively, characterize the major demographic trends affecting higher education in the coming decade. These characteristics are the extreme regional variation of demographic trends, the increasing participation of older age groups in higher education, the continued demand from women for educational opportunities, and broader cultural diversity.

In the following section, these individual traits are analyzed, and the implications and opportunities that arise for higher education institutions are examined.

FIGURE 1

Change or Conflict in U.S. Universities and Colleges During The Twentieth Century

Decade	Change and/or Conflict
1900-1910	Minor
1910-1920	Major
1920-1930	Minor
1930-1940	Major
1940-1950	Major
1950-1960	Major
1960-1970	Transformational
1970-1980	Transformational
1980-1990	Minor
1990-2000	Major (anticipated)

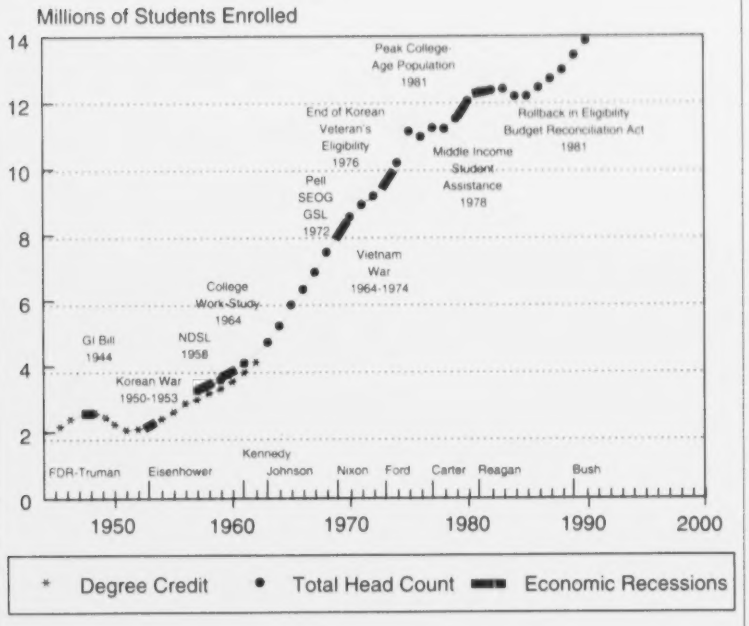
Source: Clark Kerr, "Higher Education Cannot Escape History: The 1990s," *New Directions for Higher Education: An Agenda for the New Decade*, edited by Larry W. Jones and Franz A. Nowotny, San Francisco: Jossey-Bass Inc., p. 12.

Dramatic Regional Variation of Demographic Trends

The total U.S. population is projected to increase by approximately 7 percent, or 18 million, in the 1990s; this estimate leads to 268 million citizens by the year 2000. This

FIGURE 2

Chronology of Student Aid Programs, Economic Cycles, and Political Events That Have Affected College Enrollment



Note: In the earliest years, the only enrollment data available are for students enrolled in degree credit programs. Total headcount enrollment includes both degree credit and non-degree credit enrollment.

Source: Carol Frances + Associates, based on enrollment data from the U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990.*

Economic trend data from the U.S. Department of Commerce, Bureau of Economic Analysis, *Business Cycle Developments.*

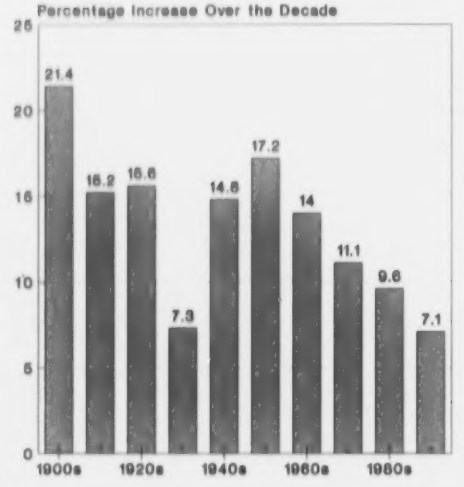
represents a slowdown in the nationwide growth rate, which increased by nearly 10 percent in the 1980s (figure 3).

The key to understanding and responding to population trends is to recognize the potent differences in population trends by state and region. The range of growth rates among the states is extraordinary. California, projected to increase by approximately 4.7 million, will account for 26 percent of the total population increase for the entire nation. Arizona is forecast to increase its population an estimated 26 percent, or almost 1 million by the end of the decade. California, Virginia, Florida, North Carolina, and Georgia account for two-thirds of the total projected population increase for the nation. At the same time, 13 states are projected to experience net decreases in population. Iowa, Louisiana, and Oklahoma are each anticipated to undergo a net decrease of over 200,000 people, and the population of Wyoming is expected to decrease by 13 percent (figure 4).

State population projections are subject to much more variability than projections for the nation as a whole because large numbers of people move from one state to another in search of job opportunity. Thus, projections in state population growth or decline are subject to substantial change due to economic forces. State population trends are critically affected by the interstate migration of people, which is in turn directly affected by individual state economic performance. For example, several states are currently having fiscal difficulties which may keep their population growth below the projected levels. Texas serves as an interesting example of the mutable nature of a state. After the problems in the oil industry and the collapse of real estate markets in major cities in the 1980s, Texas had been projected to experience a sharp slowdown in its population growth. However, an increase in the price of oil, a resurgence of the real estate market, and the rewards of industry diversification are contributing to an economic resurrection that may support a larger population increase than ever imagined.

FIGURE 3

1990s Population Increase Projected to Be the Smallest Of Any Decade in the 20th Century



For additional information, see figure A-1 in appendix.

Source: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract.

U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States, by Age, Sex, and Race: 1988 to 2080*, Series P-25, Number 1018, January 1989, p. 29.

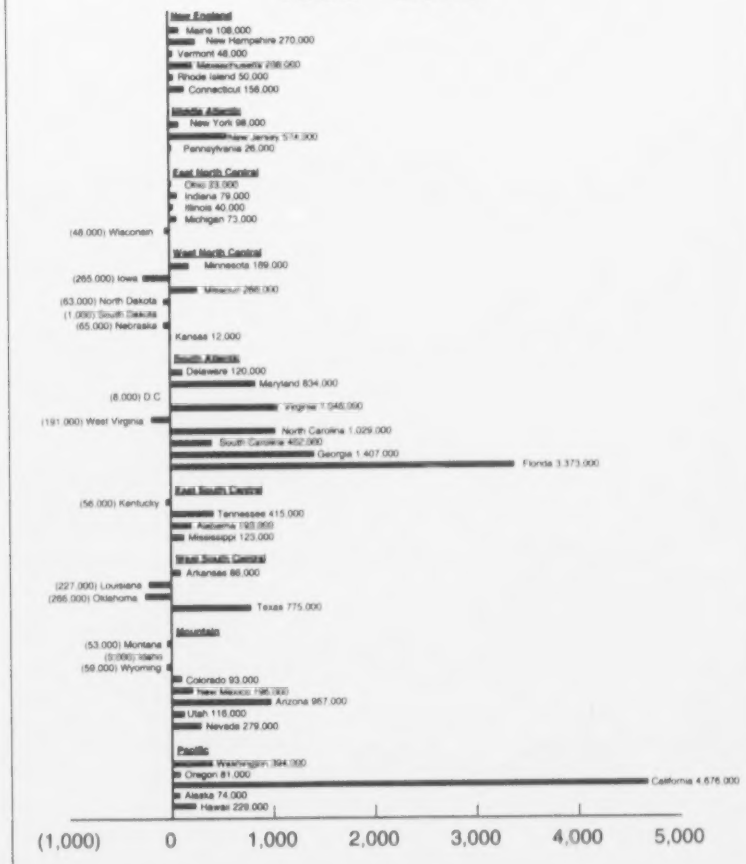
Implications for Higher Education

Substantial regional and state variations in population trends have crucial implications for higher education. The following points illustrate the delicate relationship between geographic population shifts and higher education institutions.

Institutions will be affected in vastly different ways by demographic trends depending on where they are located and whether they draw from a local, state, regional, or national market. Colleges and

FIGURE 4

Projected Population Changes by State 1990 - 2000



For additional information, see figure A-2 in appendix.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States by Age, Sex, and Race: 1989 to 2010*, Series P-25, Number 1053, January 1990.

universities therefore need to conduct individualized analyses, instead of relying on national trends to predict enrollment. Economic trends in particular states and regions should also be considered when evaluating population projections. For example, institutions in California and Florida which draw heavily on in-state populations will need to plan for dramatic enrollment increases.

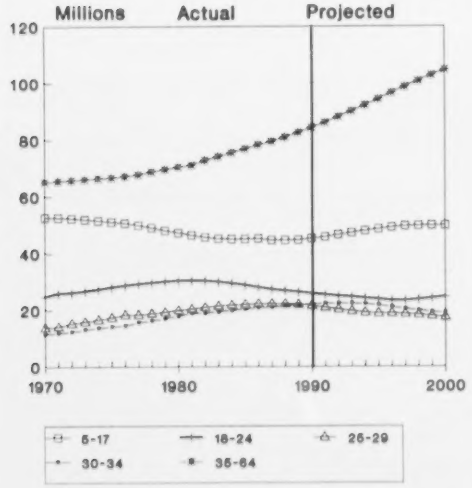
Institutions will need to differentiate themselves and develop market "niches." It will become increasingly necessary for institutions in areas with slow growth or decline in population to differentiate themselves in the higher education marketplace. These institutions should examine, clarify, and redefine their market "niche," or the particular segment of the higher education market they are targeting. For example, institutions in geographic areas with low population growth, such as Iowa and Wyoming, may reach out to older age groups seeking continuing education. The trends discussed later in this report present considerable opportunities for institutions in lower population growth areas to redefine their markets and their educational services, and to target specific population groups such as older age groups, women, and minorities.

Institutions may need to change their organizational structures to deliver educational services more effectively. Population pressures — whether growth or decline — can generate the need for colleges and universities to alter their basic design by expanding, consolidating, or merging. For example, the University of California has considered adding up to three new campuses in preparation for the population increases expected in California, while a number of small independent colleges in the Northeast are merging and consolidating in an attempt to adapt to the decreasing population growth in that region.

Increasing Participation of Older Age Groups in Higher Education

A second key observation characterizing the changes affecting higher education is the increased participation of older segments of the population. Virtually all of the enrollment growth which occurred in the 1980s can be accounted for by students older than 25.

FIGURE 5
Trends in the Population, By Age 1970-2000



For additional information, see figure A-1 in appendix.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States, by Age, Sex, and Race: 1988 to 2080*, Series P-25, Number 1018, January 1989.

The 1980s saw population growth in the 25–34 year-old sector, as well as the 35+ sector. However, in the new decade, the 25–34 age group will actually decline, while the 35+ age group will continue to grow.

Most undergraduate college enrollment projections have traditionally focused on the 18–24 year-old age group. Although the shrinkage of this core majority is a well-established trend, it is a trend that is growing more pronounced. For example, although the 18–24 age group still represents the majority of all college students, it currently represents a considerably smaller percentage of all college students than it has in the past. In 1970, the 18–24 year-old age group represented 69 percent of all college students. In 1990, that percentage had decreased to 57 percent. During the 1990s the population of this age group is projected to decline by 1.2 million people, to 24.6 million.

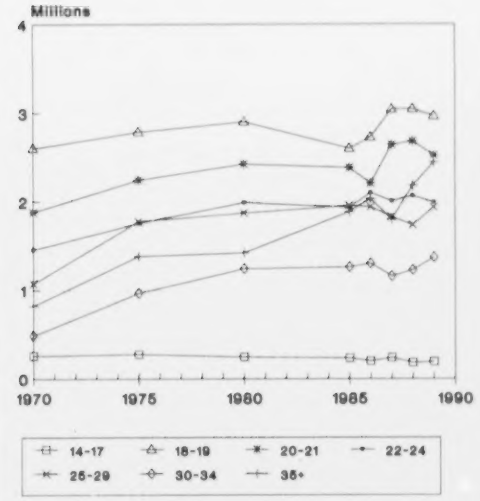
The number of individuals in the 25–34 year-old bracket is also projected to decline in the 1990s, by 16 percent. However, the 35+ age group is projected to grow by 25 percent or 20 million, to 104.6 million in the 1990s. At the same time the 5–17 age group is projected to increase by 10 percent to 49.8 million (figure 5).

Many people predicted decreases in college enrollment in the 1980s based on the decreases in the 18–24 year-old population. However, overall college enrollment actually increased by more than 10 percent in the 1980s, from 12.1 million in 1980 to 13.9 million in 1990.

This surge in the 1980s was due to increases in college enrollment in both the 25–34 and the 35+ age groups. Between 1980 and 1988, enrollment among those in the 25–34 age group increased by 5 percent, from 3.1 million to 3.3 million. Enrollment in the 35+ age group increased by 46 percent, from 1.4 million to 2.1 million. Students in the 35+ age group accounted for 86 percent of the enrollment increase over that time period, and students in the 25–34 age group accounted for 20 percent of the increase. This counterbalanced the drop in enrollment by other groups (figure 6).

The percentage of any population group attending college is referred to as the "college-going rate." If one holds college-going rates by age group constant over the next decade, enrollment would decline in every age group except the 35+ age group. College-going rates, however, have been increasing for most age groups. For example, college-going rates doubled in the 35+ age group between 1970 and 1988. Overall, college-going rates vary widely by age group (figure 7).

FIGURE 6
Trends in College Enrollment, By Age

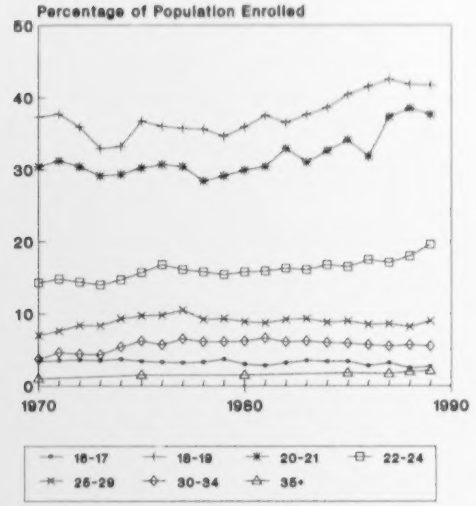


For additional information, see figure A-3 in appendix.

Source: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 169.

U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment — Social and Economic Characteristics of Students: 1988 and 1987*, Series P-20, Number 443, and earlier numbers including 319, 333, 346, 360, 362, 400, and 429.

FIGURE 7
Trends in College-Going Rates, By Age



For additional information, see figure A-4 in appendix.

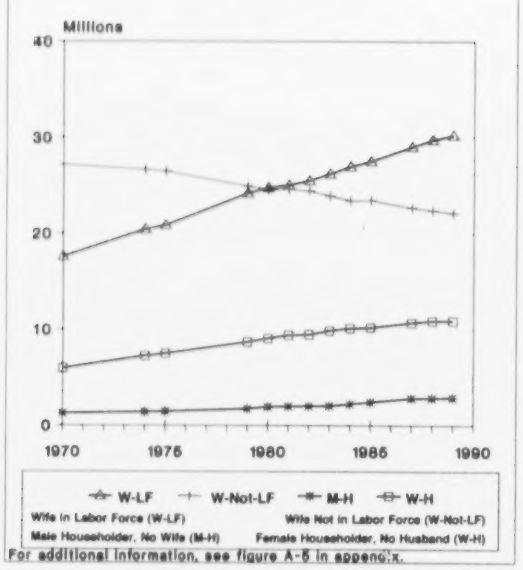
Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment — Social and Economic Characteristics of Students: 1988 and 1987*, Series P-20, Number 443, and earlier numbers including 319, 333, 346, 360, 362, 400, and 429.

Implications for Higher Education

These trends in population, college-going rates, and enrollment have vital implications for higher education, and are described further below.

Continued increases in enrollment. In the 1980s, increases in the number of people in the 25–34 age group helped offset decreases in the number of 18–24 year olds and therefore helped to sustain enrollment. In the 1990s, however, a decrease is projected in the 25–34 year-old population. If one were to assume constant participation rates by age group, total

FIGURE 8
Trends in Families
1970 - 1990



For additional information, see figure A-5 in appendix.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Money Income and Poverty Status in the United States: 1989*, pp. 30–31.

enrollment in higher education would decrease from 13.4 million in 1989 to approximately 12.5 million in 2000.

However, participation rates among older age groups increased momentously in the 1980s and in all likelihood will continue to increase in the 1990s. As noted above, enrollment in the 35+ age group increased by 46 percent between 1980 and 1988, from 1.4 million to 2.1 million. For this reason, college enrollment is expected to continue to increase in the 1990s.

The opportunity for certain institutions to improve services to older age groups. The trends described above indicate that demand for higher education in the traditional, 18–24 college-going age group may not increase, while there is great potential for increases in demand among older age groups.

Many people choosing early retirement return to school. For example, the *Wall Street Journal* recently profiled a man who, after a 24-year career with General Electric, took an early retirement and plans to study English at a local college. These trends create important opportunities for colleges and universities to respond to the needs of these older age groups.

Colleges and universities need to increase research efforts to assess the particular educational demands of these older age groups. Serving older students will be more appropriate for some institutions than others. Community colleges, for example, have taken the lead in serving the older part-time student. Other institutions, with more traditional academic programs — and/or located in nonurban locations — may have less capability and opportunity to serve these populations.

Older students often have jobs and families, and increasingly adults are heads of single-parent families. The typical adult lifestyle constrains the ability to attend higher education institutions on a full-time basis. Over a period of 20 years, the number of U.S. families headed by a single man increased 129 percent, from 1.3 million families in 1969 to 2.9 million families in 1989 (figure 8). The number of U.S. families headed by a single woman increased by 83 percent, from 6 million families in 1969 to 10.9 million families in 1989. The educational demands and income levels of single heads of households is an emerging trend that will need to be closely watched and researched. As an indication of these changing demands, the number of students attending college part-time increased from 5 million in 1980 to 5.8 million in 1989, a jump of 16 percent. Part-time students

accounted for 58 percent of the enrollment increase between 1980 and 1989 (figure 9). Offering degrees for part-time students, as well as providing flexibility in terms of location, classes, and student/teacher interaction, are opportunities for higher education institutions to appeal to older students.

Increased competition for state funds. Changes in population trends by age group will have a major impact on competition for state funds. For example, the rapid population growth in the 5–17 age group creates competition from elementary and secondary public schools for increased state funds. Especially in a recessionary economy, this leads to greater difficulty finding money in state budgets to support higher education.

Another trend that has been building for decades is the growth of the elderly segment of America's population; this is also contributing to increased costs for health care. State governments spent 58 cents per $100 of personal income on health and hospitals in 1979. In 1989, state governments spent 63 cents per $100 of personal income on health and hospitals, an increase of 9 percent (figure 10). As the population ages, more pressure will be exerted on state governments and on society in general to increase spending on health care, creating increased competition with higher education for state funding.

State funding of higher education decreased from 94 cents per $100 of personal income in 1979 to 91 cents per $100 of personal income in 1989. Continued decreases in the 1990s are anticipated due to increased competition for state funding from elementary and secondary education, health care, and other services.

FIGURE 9

Composition of the Enrollment Change
1980-1989
(In Thousands)

Students	1980	1989 Estimate	1980-1989	Percent Increase	Percent Distribution of Increase
Total Headcount	12,097	13,487	1,390	11.5	100.0
Full-Time	7,098	7,683	585	8.2	42.1
Part-Time	4,999	5,804	805	16.1	57.9
Full-Time Equivalent	8,819	9,618	799	9.1	100.0
Men	5,874	6,175	301	5.1	21.7
Women	6,223	7,312	1,089	17.5	78.3
Public	9,457	10,557	1,100	11.6	79.1
Private	2,640	2,929	289	10.9	20.9

Source: U.S. Department of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990;* and *National Higher Education Statistics: Fall 1989, Early Estimates,* December 1990. Data Series: DR-IPEDS-89/90-1.

Continued Demand from Women for Educational Opportunity

The most pivotal change in higher education enrollment can be traced directly to women, and the phenomenon of the gender shift. Women's participation in higher education has increased profoundly since the 1950s (figure 11). In 1950, 727,000 women attended college, representing 32 percent of all college students. By 1988, 6.9 million women attended college, representing 54 percent of all college students. By 1989, the population of women attending colleges and universities had increased to 7.3 million, and the latest figures for 1990 indicated that women made up 55 percent of all students in

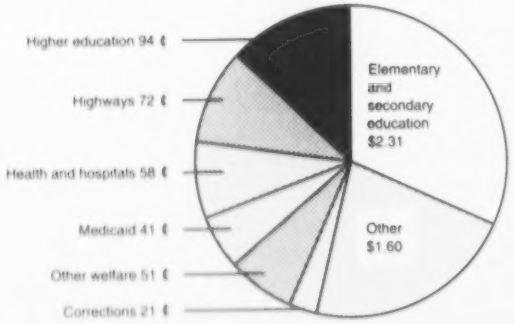
FIGURE 10

How the States Spend Their Money

State spending per $100 of personal income

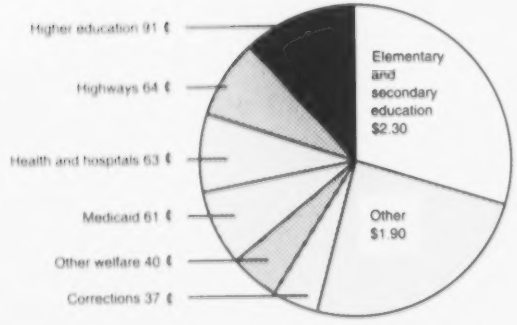
1979

Total was $7.28 per $100 of personal income



1989

Total was $7.80 per $100 of personal income



Note: Individual amounts were rounded, so totals will not be exact.

Source: Center for the Study of the States.

higher education. This gender shift reached an impressive point in 1978 — the year that women became the new majority of college students.

A number of factors account for this increase in the enrollment of women. Many of the women attending college since the 1950s are older women who are pursuing degrees after raising children. Women are entering the work force in great numbers, and pursuing careers that require college degrees. The need for two incomes in families just to maintain current standards of living is sending women back to the work force. Also, some women find it necessary to acquire additional academic credentials in order to break through the corporate "glass ceiling" and gain parity with their male counterparts in top management positions.

Of the 6.9 million women attending college in 1988, 46 percent attended part-time.

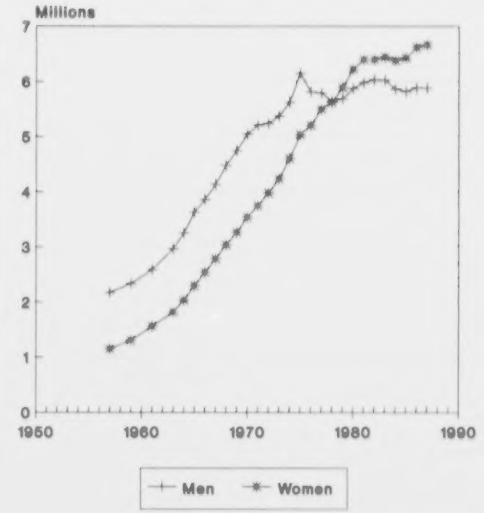
Women accounted for 78 percent of the total enrollment growth between 1980 and 1989. College-going rates increased at a much higher level among women than among men in the three race categories of whites, blacks, and Hispanics (figure 12). The college-going rates of adult white women increased by 24 percent between 1980 and 1989, while college-going rates of adult white men increased 15 percent in that same time frame. College-going rates among black women increased 14 percent, almost three times the increase of black men. College-going rates of Hispanic women increased by 9 percent, almost double the increase of Hispanic men over the same time period.

Women differ notably from men in the types of degrees they pursue. Although women have made important inroads in the physical sciences and engineering, they still pursue degrees predominantly in the humanities and social sciences (figure 13).

For example, in 1986 women represented only 36 percent of all those students awarded bachelor's degrees in chemistry, and 15 percent of all those students awarded bachelor's degrees in physics. Only 12 percent of students earning bachelor's degrees in electrical engineering were women, and only 13 percent of students earning bachelor's degrees in civil engineering were women. Women also represent a minority of students earning professional degrees. Only 31 percent of all medical degrees and 23 percent of all dentistry degrees awarded in 1986 were earned by women. Although women represented a large percentage (40 percent) of all students earning law degrees in 1986, they still constituted a minority of all law degree graduates.

However, in the fields of study that are traditionally popular with women, they are clearly in the majority. For instance, in 1986 women earned 76 percent of all bachelor's

FIGURE 11
Trends in Enrollment, By Gender



Source: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 169.

FIGURE 12

College-Going Rates, By Race and Gender Age 18 - 24

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment — Social and Economic Characteristics of Students: 1988 and 1987*, Series P-20, Number 443, and earlier numbers including 319, 333, 346, 360, 362, 400, and 429.

For additional information, see figure A-4 in appendix.

degrees in education. Women represented 66 percent of all those students awarded bachelor's degrees in English, and 72 percent of all those students awarded bachelor's degrees in foreign languages.

Implications for Higher Education

As can be imagined, this gender shift has serious ramifications for colleges and universities. Higher education has a new majority, and with this comes a new set of opportunities and priorities. Three major implications are detailed below.

The opportunity exists for institutions to continue and increase their responsiveness to the interests of women. Colleges and universities have changed considerably in response to the increasing numbers of women college students. During the 1970s many all-male private institutions began to admit women. Courses and majors of special interest to women began to appear in the 1970s and 1980s. Women's studies programs, among other offerings, are now the norm at most colleges and universities. It is anticipated that colleges and universities will continue to realign their services in response to the demands of women students in these and other ways.

There will be continued heavy demand for the services of community colleges. As indicated above, significant numbers of women students attend college part-time, and pursue two-year degrees. It is therefore likely that women will continue to attend community colleges in high numbers, as they offer the close geographic proximity, flexibility, and particular degree programs that meet the needs of many women.

There is a need for institutions to be responsive to the particular degree choices of women. It is essential that higher education institutions be attuned to the degrees pursued by women. Strong programs in the humanities and social sciences will continue to attract women students. However, as women respond to work force changes which increasingly provide greater rewards and opportunities to those with science degrees and professional degrees, shifts in their degree preferences will likely occur.

FIGURE 13

Representation of Women in Degrees Conferred, By Selected Area 1985-1986

Degree Area	Total	Men	Women	Percent Men	Percent Women
Bachelor's Degrees in Physical Sciences & Engineering					
Chemistry	10,116	6,483	3,633	64	36
Physics	4,056	3,467	589	85	15
Electrical Engineering	23,742	20,906	2,836	88	12
Civil Engineering	8,679	7,538	1,141	87	13
Bachelor's Degrees in Humanities & Social Sciences					
Education	87,221	20,986	66,235	24	76
English	27,576	9,231	18,345	33	67
Foreign Languages	10,102	2,784	7,318	28	72
Professional Degrees					
Law	37,041	22,293	14,748	60	40
Medicine	15,938	11,022	4,916	69	31
Dentistry	5,046	3,907	1,139	77	23

Source: Compiled from the *Fact Book on Higher Education: 1989–90.* American Council on Education, MacMillan, New York.

FIGURE 14

Projected
Net Change in the Population,
By Age and Race
1990 - 2000
(In Thousands)

Total 18-24	All Races	White	White Non-Hisp	Black Non-Hisp	Hispanic	Asian & Other
1990	25,795	21,174	18,787	3,797	2,387	827
2000	24,602	19,807	17,040	3,773	2,767	1,022
Net Change	(1,193)	(1,367)	(1,747)	(24)	380	195
Percent Change	(4.6)	(6.5)	(9.3)	(0.6)	15.9	23.6

Total 25-34	All Races	White	White Non-Hisp	Black Non-Hisp	Hispanic	Asian & Other
1990	43,529	36,288	32,660	5,860	4,628	1,381
2000	36,415	29,590	25,786	5,316	3,804	1,509
Net Change	(7,114)	(6,698)	(6,874)	(544)	(824)	128
Percent Change	(16.3)	(18.5)	(21.0)	(9.3)	(17.8)	9.3

Total 35-64	All Races	White	White Non-Hisp	Black Non-Hisp	Hispanic	Asian & Other
1990	84,304	72,822	67,183	8,919	5,639	2,563
2000	104,629	88,621	80,389	12,290	8,232	3,718
Net Change	20,325	15,799	13,206	3,371	2,593	1,155
Percent Change	24.1	21.7	19.7	37.8	46.0	45.1

Source: Carol Frances + Associates, based on data from the U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States by Age, Sex, and Race: 1988 to 2080*, Series P-25, Number 1018, January 1989, and Number 995 for the Hispanic population.

Broader Cultural Diversity

The single most compelling demographic factor in the 1990s is the increasing cultural diversity of the student population. This trend has been developing for some time; the influence of cultural diversity both requires a response from and creates new opportunities for higher education.

The population trends among age groups vary meaningfully by race (figure 14). For example, while the overall population of the 18–24 age group is projected to decline by 1.2 million or 4.6 percent in the 1990s, the Hispanic population in that age group is projected to increase by 2.8 million or 16 percent. The Asian population in that age group is projected to increase by 1.0 million or 24 percent.

Minority students accounted for 47 percent of the enrollment growth between 1980 and 1988 (figure 15). Asians and Pacific Islanders have surging enrollment rates, with a combined 74 percent increase in enrollment between 1980 and 1988. Enrollment among Hispanic students grew 44 percent in that same time period.

The number of people who immigrated to the U.S. in the 1980s was higher than in any other decade since the first decade of this century. During the 1980s, the U.S. admitted over 6 million immigrants to the country (figure 16). Well over 40 percent of those immigrants were from Asia. A large number of immigrants,

FIGURE 15

Composition of the Enrollment
Change, by Race
1980-1988
(In Thousands)

	1980	1988*	1980-1988	Percent Increase	Percent Distribution of Increase
Total Enrollment	12,087	13,043	956	7.9	100.0
White, Non-Hispanic	9,833	10,283	450	4.6	47.1
Total Minority	1,949	2,400	451	23.1	47.2
Black, Non-Hispanic	1,107	1,130	23	2.1	2.4
Hispanic	472	680	208	44.1	21.8
Asian or Pacific Islander	286	497	211	73.8	22.1
American Indian/ Alaskan Native	84	93	9	10.7	0.9
Nonresident Alien	305	361	56	18.4	5.9

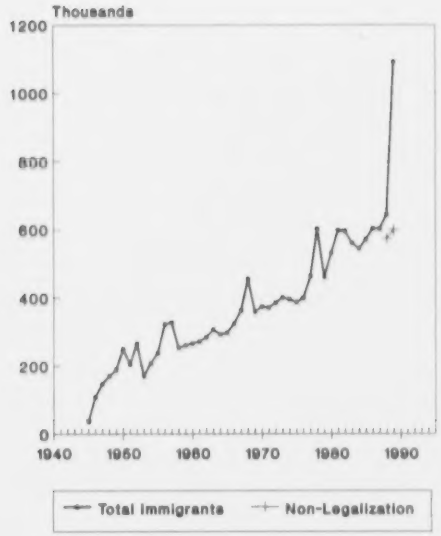
* Preliminary data

Note: Details may not add to totals because of rounding.

Source: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 199; and *Trends in the Racial/Ethnic Enrollment in Higher Education: Fall 1978 Through Fall 1988*, NCES 90-370, June 1990, p.3.

FIGURE 16

Number of Immigrants to the U.S. 1945 - 1988



Note: Non-legalization represents what immigration population would have been without the Immigration Reform Control Act (IRCA).

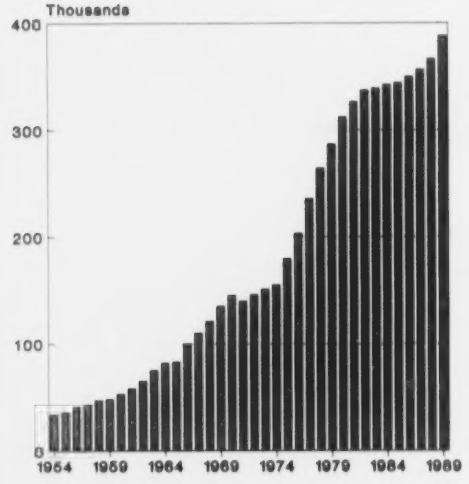
Source: U.S. Immigration and Naturalization Service, special computer runs.

For additional information, see figure A-6 in appendix.

primarily from Mexico and Central America, had been residing in the U.S. but were officially admitted to the country in 1989 under the Immigration Reform and Control Act (IRCA) of 1986. Six states accounted for 80 percent of all immigrants admitted to the country during 1989: California, New York, Texas, Illinois, Florida, and New Jersey.

Increasing numbers of foreign students are enriching the cultural diversity of American colleges and universities. Foreign student enrollment has increased vigorously over the last several decades, from 53,000 in 1960–1961 to 388,000 in 1989–1990 (figure 17). Asian students have represented more than half of all foreign students in the U.S. for the last three years. The rate of increase in foreign students slowed somewhat in the early 1980s when an overvalued dollar increased their cost of enrolling in American institutions, but foreign students are nevertheless an important market for colleges and universities.

FIGURE 17
Total Foreign Student Enrollment In U.S. Colleges and Universities 1954-55 to 1989-90



For additional information, see figure A-7 in appendix.

Source: Institute for International Education, *Open Doors*, Annual issues, New York, New York.

U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 192; and unpublished data.

Implications for Higher Education

Immigration, the growth in the population and enrollment of minorities, and increased foreign enrollment considerably broaden cultural diversity in the student population. Cultural diversity certainly challenges higher education, but it also presents a number of unique opportunities. Higher education has the opportunity to:

Realign services to target culturally diverse groups. For some time, colleges and universities have worked to address increasing cultural diversity by realigning their services to address minority groups. Some institutions have added required courses in minority studies; some institutions have found it necessary to enhance the language skills of foreign graduate students before they are given responsibility for instructing undergraduates; some institutions are making efforts to increase minority representation in their faculty and administrations in order to become more responsive to and reflective of their student bodies. Higher education will continue to respond to increasing cultural diversity in these and other ways, especially in those states where cultural diversity and immigration rates are highest, such as California and Florida.

Focus on serving increased foreign student market. The increase in foreign enrollment presents an opportunity for independent colleges concerned with declining enrollment to focus on services to foreign students. For example, colleges could provide orientation programs for incoming foreign students and make efforts to integrate them into the student population.

Course offerings could place greater emphasis on Asian languages, and on English as a second language.

Pursue collaboration with foreign universities. A number of Japanese universities are actively seeking American higher education institutions with which to collaborate on programs to educate visiting Japanese students. In these situations, both sides benefit: Japanese students are exposed to American culture and a high standard of education, and institutions receive a steady stream of students. This trend will continue and is likely to expand to universities in other Asian countries, such as Korea, which are rapidly increasing their economic presence in the United States.

Summary and Conclusion of Demographic Trends

The analysis of demographic trends identifies four key forces which, collectively, characterize the major demographic trends affecting higher education in the new decade. The influence of women, the regional variation of demographic trends, cultural diversity, and the participation of older students are all interrelated, and the particular ways in which they react with one another will determine their implications for individual higher education institutions.

For example, institutions in states experiencing low population growth may increasingly target older age groups. Since women are one of the forces driving the growth of minority participation in higher education, institutions targeting minorities will have to be especially responsive to the needs of minority women. States where immigration rates are highest will need to be particularly responsive to increasing cultural diversity. These forces and their implications for higher education institutions are summarized below.

Dramatic Regional Variation of Demographic Trends

Population shifts will emphatically change state and regional populations in the 1990s. Higher education demand will therefore vary profoundly among institutions in different geographic areas. Institutions will need to conduct individual analyses of the population trends in their home states in order to accurately project and plan for changes in

enrollment. Higher education institutions can respond to these changes by developing market niches, clarifying and redefining their target markets, and changing their organizational structures through expansions, mergers, and consolidations.

Increasing Participation of Older Age Groups in Higher Education

Increased participation of older students will lead to increased overall enrollment in the 1990s. As older individuals continue to pursue higher education services in greater numbers, opportunities are created for higher education institutions to realign their services in response to the particular service demands of older students. Such realignments include providing greater flexibility in the time, place, and content of programs, as well as offering more part-time degree options.

Increasing population growth in the very youngest and the very oldest age groups will create greater competition for state funds as demand increases for elementary and secondary education and health care services.

Continued Demand from Women for Educational Opportunity

As women continue to represent the majority of all college students, higher education institutions should continue to realign their services in response to the particular service demands of women students by offering part-time degrees, two-year degrees, and courses and majors of special interest to women. Demand for community colleges will remain intense, since they present the geographic proximity, flexibility, and particular degrees that meet the needs of many women. Opportunities also exist for higher education institutions to provide services responding to the needs of women as they continue to enter the sciences and seek professional degrees in greater numbers; this in turn is a response to work force trends which provide more rewards and opportunities to holders of these degrees.

Broader Cultural Diversity

The most significant of the four demographic trends previously identified with regard to higher education in the 1990s is the increased cultural diversity of the population. Institutions will need to make major changes in their efforts to serve an increasingly culturally diverse student body. The ever-building cultural diversity of the population

requires changes in virtually every aspect of higher education, including admissions policies, financial aid, faculty recruitment, degree offerings, curricula, the professor/student relationship, and student life. Opportunities also exist for institutions to target foreign students and to collaborate with foreign universities to develop programs for visiting students.

The demographic changes described above present major challenges and opportunities for higher education institutions in the 1990s. Greater flexibility in educational offerings; changes in curricula; and target marketing of older students, women, and foreign students are just a few of the ways in which higher education institutions can respond to these challenges. The institutions that succeed in the coming years will be those that realign their services and redefine their product in response to the changing service demands of their students.

The Impact of Work Force Trends on Higher Education

THE U.S. WORK FORCE has been undergoing major changes which will intensify in the coming decade. Although job opportunities will increase significantly in some fields and professions, they will decrease markedly in others. The knowledge and skills needed to succeed in the work force of the 1990s will continue to change as the transition from an industrial society to an expanding information/service-based society gains momentum. The 1990s will be a watershed period in this transformation. According to Richard Nolan, chairman and co-founder of Nolan-Norton Co., 1995 will represent the middle point of the global information society, just as 1945 represented the middle point of the industrial society.

Corporations are making major shifts in their organizational structures as they eliminate layers of middle management and lower-level positions. Corporations are evolving into flatter, less hierarchical structures. But corporations are not the only ones undergoing change; the work force is also evolving. Increasingly, individuals are developing career "portfolios" in which they engage in several different careers with different organizations throughout their working lives. New jobs are being created faster in small firms than in large firms. More people are going into business and working from home offices instead of moving up career ladders in large firms. America is entering a new era of "intellectual capitalism" in which the most important asset of the business world is the knowledge of its workers.

The scope of the nation's unmet education and training needs created by these work force and demographic trends is immense (figure 18). It is estimated that the potential market for higher education could total between 15 million and 40 million people. Groups needing education and training include:

- Existing workers who must upgrade their skills
- Underemployed workers

FIGURE 18

Magnitude of the Nation's Unmet Education and Training Needs 1990 (In Millions)

Total U.S. Labor Force Estimate for January 1990: 125 Million

Work Force Group	Approximate Group Size	Percent Needing Training: Range	Calculated Magnitudes
Current work force:			
Upgrading skills of existing workers: 10% yearly of total	12	20-50	2-6
Underemployed: 10% yearly of total	12	20-50	2-6
Unemployed	6	20-50	1-3
Dislocated workers	10	20-50	2-5
Reentrants to work force	6	20-50	1-3
New entrants to work force annually	4	20-33	1-1
Underprepared workers: high school dropouts	20	10-20	2-4
Women entering work force	9	10-33	1-3
Disabled people of working age	12	20-50	2-6
Immigrants	6	20-50	1-3
Total			15-40

Notes: The total includes double counting of people in more than one work force group. The purpose of this framework for calculating the order of magnitude of the training needs is simply to indicate that the numbers are potentially large. The framework is intended to serve as a rough starting point for developing more precise estimates.

Source: Carol Frances + Associates, first published in *Productive America: Two-Year Colleges Unite to Improve Productivity in the Nation's Workforce*, National Council for Occupational Education and American Association of Community and Junior Colleges, January 1990, Report 2, p. 7.

- Unemployed workers
- Dislocated workers
- Individuals reentering the labor force
- New entrants to the work force
- High school dropouts
- Disabled people of working age
- Immigrants

In a separate study, the American Society for Training and Development (ASTD) estimated that an additional $45.4 billion is needed to fully train U.S. workers in order to keep up with the new demands of their jobs (figure 19). Major categories of unmet training include technology, management, customer service, and basic skills.

In order to successfully serve these diverse groups in need of higher education, colleges and universities will need to make major changes in virtually every aspect of their organizations, including admissions, financial aid, curricula, teaching styles, faculty recruitment, tuition pricing, and student life. Those institutions that can respond to the needs of these varied groups will find a robust market to serve in the new decade.

Work force trends will have formidable effects on the demand for the services of higher education institutions in the 1990s. For example, major shifts in student demand for higher education services are emerging as students pursue programs and degrees in the professions experiencing greatest growth. Also, mid-career professionals are losing jobs due to organizational changes; many of these professionals will be pursuing further education in order to rechannel their careers. As individuals pursue multiple careers, they will return to colleges and universities for further education to facilitate the transition process, and for opportunities to learn and grow. Together, these work force and demographic trends are causing a paradigm shift in higher education, from its historic identity as a provider of a discrete learning experience for young people to an expanded identity as a provider of lifelong education to many adults engaged in the work force. Along with this paradigm shift comes a new focus on quality as colleges and universities compete with more unconventional providers of lifelong learning experiences.

The changing role of education will continue to differentiate colleges and universities. Some, like community colleges, will continue to grow and adapt to the changing needs of their clients. Other, more traditional institutions will be forced to reexamine their roles and missions given changing demographic and educational demands.

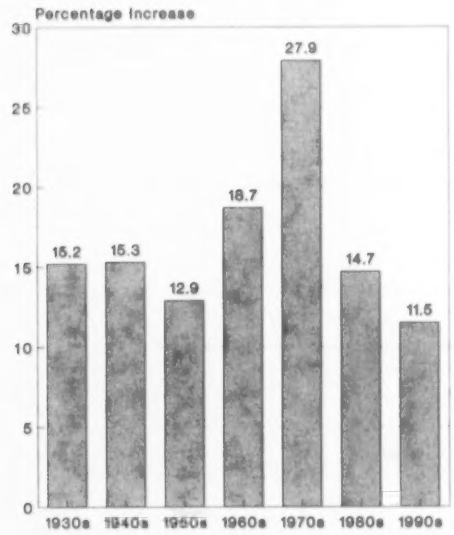
FIGURE 19

Estimated Unmet Training Needs in 1989

Type of Training	Workers (in Millions)	Estimated Cost of Training (in $Billions)
New technology:		
Technical workers	9.3	8.7
Skilled workers	6.8	6.5
Executive management/ supervisory	5.5	9.7
Customer service	11.4	5.4
Basic skills	16.6	15.1
Total	49.6	45.4

Source: Anthony Carnevale, American Society for Training and Development.

FIGURE 20
Increase in the Labor Force



Source: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours, and Earnings: United States, 1909–1990,* Bulletin 2370, March 1991.

Characteristics of the Work Force in the 1990s

Major changes are taking place in the size and composition of the work force which have serious implications for higher education. The work force of the 1990s is expected to be characterized by an overall slowdown of growth, a shift in the composition of the labor pool, a high number of displaced workers, large variances in growth by geographic region, and the requirement of elevated educational attainment levels. Together these changes in the nature of the work force will give higher education a crucial role in America's productivity. In fact, because of its key role in preparing the work force for the challenge of global competition, higher education can be considered this nation's new strategic industry.

Slow Growth in the Labor Force

The rate of growth of the labor force is projected to slow in the 1990s to the lowest rate since the turn of the century (figure 20). The labor force is projected to increase by 11.5 percent in the 1990s, in contrast to the 27.9 percent growth rate in the 1970s and 14.7 percent growth rate in the 1980s.

In large part, America's increased standard of living was generated, in the 1970s and 1980s, by sending more members of many households into the work force, while productivity gains slowed because of the entry into the work force of comparatively large numbers of younger, less experienced workers. In the 1990s, America will face a slowdown in the rate of growth of the labor force; in order to maintain and improve the nation's current standard of living, control the national debt, and remain competitive in the global marketplace, productivity must be increased at a greater rate. Productivity gains will need to be achieved through greater emphasis on improving the technical, professional, and managerial skills of existing workers. Education and training will become even more important, since so many new entrants to the work force will be unprepared to meet the knowledge and productivity demands of the new jobs in the 1990s.

Shift Toward Women and Minorities

There will be an estimated 42.8 million new entrants to the U.S. work force between 1988 and 2000. During the same time period, 23.4 million individuals are projected to

leave the work force, resulting in a net increase of 19.5 million workers. The total work force is projected to increase by 16 percent, from 121.7 million in 1988 to 141.1 million in 2000 (figure 21A).

Almost half of all those projected to leave the work force between 1988 and 2000 will be white males. Over 11.3 million white men are projected to leave the work force between 1988 and 2000, accounting for 48 percent of all those leaving the work force in that time period (figure 21B). During the same time period, over 13.5 million white men are projected to enter the work force, accounting for 32 percent of all new entrants.

FIGURE 21A

Projected Growth of the U.S. Labor Force, By Race and Gender 1988-2000 (In Thousands)

	1988	New + Entrants	− Leavers:	Net New Entrants	= 2000
Total	121,669	42,832	23,371	19,461	141,130
White	96,420	28,597	19,393	9,204	105,624
Men	53,233	13,522	11,257	2,265	55,498
Women	43,188	15,075	8,136	6,939	50,127
Black	12,350	5,385	2,329	3,056	15,406
Men	6,390	2,423	1,121	1,302	7,692
Women	5,960	2,962	1,208	1,754	7,714
Hispanic	8,982	6,486	1,145	5,341	14,323
Men	5,409	3,558	681	2,877	8,286
Women	3,573	2,928	464	2,464	6,037
Asian	3,483	2,364	504	1,860	5,343
Men	1,896	1,232	282	950	2,846
Women	1,587	1,132	222	910	2,497

Note: New Entrants and Leavers were calculated from unrounded 1988 Current Population Survey data.

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, November 1989.

FIGURE 21B

Projected Growth of the U.S. Labor Force, By Race and Gender 1988-2000 (By Percentage)

	1988	New + Entrants	− Leavers:	Net New Entrants	= 2000
Total	100.0	100.0	100.0	100.0	100.0
White	79.3	66.8	82.6	47.2	74.8
Men	43.8	31.6	48.0	11.6	39.4
Women	35.5	35.2	34.6	35.6	35.4
Black	10.2	12.6	10.4	15.7	11.0
Men	5.1	5.7	5.2	6.7	5.3
Women	5.1	6.9	5.2	9.0	5.7
Hispanic	7.4	15.1	4.9	27.5	10.2
Men	4.5	8.3	2.9	14.8	5.9
Women	2.9	6.8	2.0	12.7	4.3
Asian	3.1	5.5	2.2	9.6	4.0
Men	1.7	2.9	1.2	4.9	2.1
Women	1.4	2.6	1.0	4.7	1.9

FIGURE 22

Employment Status of
Workers Displaced Over Previous Five Years
January 1990

	Thousands	Percent Distribution
Workers who lost jobs (full-time and part-time)	4.326	100.0
Left labor force	590	13.7
In labor force, but unemployed	607	14.0
Employed	3.129	72.3
Total who lost full-time wage and salary jobs and who were re-employed January 1990:	2.880	66.1
Employed part-time	279	6.4
Employed full-time	2.424 *	56.0 *
Earnings relative to those of last job:		
Earning 20 percent or more below	543	12.6
Earning below but within 20 percent	392	9.1
Earnings equal or above but within 20 percent	597	13.8
Earning 20 percent or more above	635	14.7
Self-employed	177	4.1

* Note: The total includes individuals who did not report earnings on the lost job.

Source: U.S. Department of Labor, Bureau of Labor Statistics, *News*, USDL 90-364, July 17, 1990, Tables 6–7.

Over 8 million white women are projected to leave the work force between 1988 and 2000, accounting for 35 percent of all those leaving the work force in that time period. However, almost twice as many white women, or over 15 million, are projected to enter the work force, representing 35 percent of all new entrants. During this time period, 1.5 million more white women will enter the work force than white men.

Over 14 million minority individuals are projected to enter the work force between 1988 and 2000, accounting for 33 percent of all new entrants. Of these minority entrants, half are projected to be women. At the same time, an estimated 4 million minorities will leave the work force, accounting for just over 17 percent of all leavers.

Sixty-eight percent of all new entrants to the labor force are projected to be women and minorities. This increase in women and minorities in the work force, combined with the large numbers of white men leaving, will have a striking impact on the composition of the work force in the 1990s. White men will become increasingly less representative of the average employee. While white men represented 44 percent of the work force in 1988, they are projected to represent 39 percent of the work force by the year 2000. The work force of the 1990s and beyond will be much more varied in gender and race than it has ever been before.

Displaced Workers

Though the overall number of displaced workers has decreased since the first national survey in 1986, at current rates, one out of every dozen workers in the United States will be displaced in the 1990s. The work force is expected to be characterized by high numbers of displaced workers. Between 1985 and 1989, 4.3 million workers lost their jobs (figure 22). Only 66 percent of these workers were reemployed as of January 1990. About one-third of all workers who lost their jobs between 1985 and 1989 are currently employed and earning salaries equal to or above the salaries they earned before losing their previous jobs. The factors, both new and old, that lead to the increasing number of displaced workers include corporate mergers, acquisitions, and divestment; increased international competition; corporate downsizing; plant relocation; technological change; and plant closings. These displacement trends are likely to continue (and most probably intensify) well into the 1990s. Many of these displaced workers are expected to seek further education and training experiences to facilitate career transition.

Variance in Employment Growth by Sector and Occupation

Job growth is expected to vary significantly among sectors of the economy. Jobs in the service industries have grown steadily since the 1940s, while jobs with goods manufacturers have increased only slightly since 1940, and have remained almost stable in the 1980s (figure 23). In 1990, there were about four jobs in the service industries for every job involved with the production of goods. Many jobs in the service sector require a high level of communication skills, considerable analytical abilities, and a thorough understanding of how elements interrelate within organizations.

Employment growth is expected to vary dramatically by occupation in the 1990s, as illustrated in data extracted from the Department of Labor's *Outlook 2000* (figure 24). Some occupations are projected to experience considerable employment growth between 1988 and 2000. For example, employment for computer analysts is projected to increase by 52 percent, from 503,000 jobs to 763,000 jobs. Employment for engineers is projected to increase by 25 percent, from 1.4 million jobs to 1.8 million jobs. Employment opportunities in marketing and sales are projected to increase 20 percent, from 13.3 million jobs to 15.9 million jobs.

At the same time, many occupations are expected to experience extremely low growth — and in some cases, even negative growth. Employment for machine operators is projected to decrease by 3 percent, from 4.9 million jobs to 4.8 million jobs. Employment in the category of agriculture, forestry, and fishery is projected to decrease by 5 percent, from 3.5 million jobs to 3.3 million jobs.

FIGURE 23
Employment Trends, By Sector
Employees on Nonagricultural Payrolls

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings: United States, 1909–1990,* Bulletin 2370, March 1991.

Increased Educational Attainment Levels Required

A correlation exists between those occupations that are expected to experience growth and those that require a high level of educational attainment (figure 25). For example, based on projections of current educational attainment levels, 64 percent of all employment opportunities for computer and math analysts will require 4 or more years of college. Computer and math analysts are projected to experience, in terms of percentage, the greatest leap in employment demand between 1988 and 2000. Employment in health assessment is projected to increase by 38 percent, and 56 percent of those jobs require 4 or more years of college. At the other extreme, employment for machine operators is projected to decrease by 3 percent between 1988 and 2000, and only 4 percent of the jobs

FIGURE 24

Projected Growth of Employment in Selected Occupations by Level of Educational Attainment

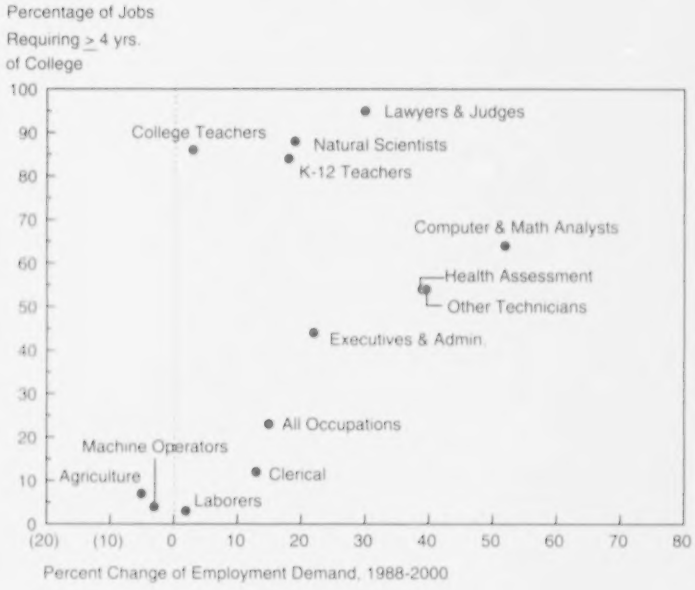
Occupation	Percent Change 1988-2000	Percent of Total Employment by Level of Attainment: Less Than High School	High School	1-3 Years of College	4 or More Years of College
Computer, math, analysts	52	0	12	24	64
Other technicians	39	1	18	27	54
Health assessment	38	2	8	35	56
Health technicians	34	3	35	40	22
Health service	34	23	51	22	5
Lawyers and judges	30	1	3	2	95
Computer operators	29	5	46	33	16
Personal service	27	19	53	22	7
Engineers	25	1	10	14	75
Health diagnosing	24	2	3	2	93
Other professional workers	24	3	16	19	82
Food preparation	23	37	42	17	4
Protective services	23	12	43	29	16
Executive, administrative	22	5	27	24	44
Marketing and sales	20	13	39	24	23
Building service, cleaning	20	41	46	10	3
Engineering technicians	22	4	36	39	22
Natural scientists	19	2	4	6	88
K-12 teachers	18	1	7	8	84
Construction trades	16	25	53	17	5
Other clerical	12	9	51	28	12
Mechanics	13	21	55	19	4
Machinery and vehicle operators	12	29	53	14	5
Clerical supervisors	12	4	45	26	24
Mail clerks, messengers	10	10	48	28	14
Secretaries	10	4	54	33	10
Precision production	3	23	52	18	8
College teachers	3	0	4	10	86
Laborers	2	37	47	13	3
Financial recordkeeping	1	5	54	28	13
Machine operators	(3)	34	52	11	4
Private household workers	(5)	50	34	12	4
Agricultural, forestry, fishery	(5)	36	44	12	7
All Occupations	15	16	40	21	23

Note: Details may not add to totals because of rounding.

Source: U.S. Department of Labor, Bureau of Labor Statistics. *Outlook 2000*, Bulletin 23252.

FIGURE 25

Correlation Between Educational Attainment and Growth Rates of Selected Occupations



Source: Based on data from George Silverstri and John Lukasiewicz, "Projections of Occupational Employoment, 1988–2000," U.S. Department of Labor, *Monthly Labor Review*, November 1989.

in that field require 4 or more years of college. Employment for workers involved in heavy physical labor is projected to increase by only 2 percent, and only 3 percent of those jobs will require 4 or more years of college. One of the few exceptions to this correlation between employment growth and the level of educational attainment required is the occupation of college teaching. While opportunities are projected to increase by a net of only 3 percent in this field, 86 percent of all college teaching jobs require 4 or more years of college. However, the large number of retirees from college teaching will create considerably more overall opportunity in this field than the net increase of 3 percent.

There is no question that the level of educational attainment required for jobs is increasing. An estimated 23 percent of all jobs will require 4 or more years of college by the end of this century.

Furthermore, the wage gap between those with high school degrees and those with college degrees is widening. According to Frank Levy, a University of Maryland economist, in 1979 the average college graduate aged 25–34 earned 18 percent more than a high school graduate of the same age. By 1986 that gap had increased to 43 percent, and that number can be expected to increase in the 1990s.

Opportunities for Higher Education

Together these characteristics of the work force of the 1990s have thrust higher education into a position to become the nation's new strategic industry. If higher education does not aggressively seek to satisfy the rising demands of the work force, others will do so. For example, U.S. employers already spend $30 billion a year on formal training, as reported by the ASTD.

Although there will be a slowing of growth in the work force in the 1990s, there will be a dynamic shift in its composition as women and minorities enter in greater numbers, educational attainment levels required for jobs increase, and individuals respond to the widespread differences in employment opportunities among occupations.

Whereas an estimated 23 percent of all jobs will require 4 or more years of college by the end of this century, few gender/race groups have attained this level of education, according to Arthur Levine. He estimates that even though 40 percent of Asian men and 27 percent of Asian women have 4 or more years of college, only 8 percent of black men and women, 9 percent of Hispanic men, and 6 percent of Hispanic women have at least 4 years of college. Even among whites, only 21 percent of men and 13 percent of women

have at least 4 years of college. These work force trends create opportunities for higher education institutions to help individuals prepare for jobs and careers in the emerging high-growth occupations.

For example, as noted previously, women students as a group still pursue degrees in the humanities and social sciences in greater numbers than degrees in the physical sciences and engineering. Many of the occupations experiencing the greatest growth in the 1990s are those occupations requiring a high level of education in technical fields. Higher education institutions should anticipate, encourage, and respond to a shift of more women into technical degree areas as the differences in employment opportunities for those with and without technical degrees become even more sharply defined.

According to the Hudson Institute's *Workforce 2000: Work and Workers for the 21st Century*, "the types of jobs being created by the economy will demand much higher levels of skill than the jobs that exist today. Minority workers are not only less likely to have had satisfactory schooling and on-the-job training, they may have language, attitude, and cultural problems that prevent them from taking advantage of the jobs that will exist." Many will need to start in the work force at low-paying, entry level positions and achieve advancement by gradually increasing their education and skill levels as they adapt to their work environments.

A recent report on minorities and education issued by a national panel commissioned by the Education Commission of the States points out that by the end of this century, minorities will comprise close to one-third of the nation's work force, and a majority of all new jobs will require a college education. Yet in 1987 minorities received only 12 percent of all college degrees awarded in the United States.

This gap between future job requirements and the education and training levels of many minorities, especially blacks and Hispanics, creates opportunities for institutions to realign their services. Changes in admissions and financial aid policies, program offerings, and faculty hiring may be necessary to facilitate the preparation of minorities for jobs in the future.

The state of the economy affects employment and unemployment which, in turn, affects college enrollment. During periods of economic recession, college enrollment usually increases as people out of work return to college. The large numbers of displaced workers in the 1980s, and those who will be displaced as a result of the latest recession, create opportunities for higher education institutions to assist those who choose to rechannel their careers by obtaining further education. In order to accommodate these

anticipated increases in students from older age groups, colleges and universities will need to continue to realign their services by increasing part-time degree offerings and providing increased flexibility in time, place, and content of programs offered.

Higher education institutions have an excellent opportunity to promote and encourage workers to enhance existing skills and to learn new ones before the workers face layoff and downsizing situations. The model used in France is both prescient and practical: employers are required to contribute to an education fund for their workers. This is an excellent example of investing in employment skill development.

Major Transformations in the Nature of Work

To anticipate changes in the work force and their effect on higher education, it is important to understand the changes taking place in the nature of work. Major transformations which are influencing not only the work force but also work itself include the transition to an information society, the growing tendency for individuals to have multiple careers, the need for lifelong education, and the change in the traditional hierarchical corporate structure.

These transformations create major implications, challenges, and opportunities for higher education in the 1990s.

The Information Society

In *Powershift*, futurist Alvin Toffler describes how the sources and determinants of power in the world have shifted throughout history. In earlier times, power was achieved through violence. Later, violence was replaced by wealth as the major determinant of power. Modern society is now undergoing a shift in which knowledge will replace wealth as the major determinant of power. Toffler observes that "the most important economic development of our lifetime has been the rise of a new system for creating wealth, based no longer on muscle but on the mind." Toffler is referring to the shift in the U.S. and world economies from manufacturing to services, and from an industrial society to an information society. This shift may cause more profound changes in the way Americans

work and live than the shift from an agricultural society to an industrial society which took place over a century ago.

As Toffler indicates, the information society requires much different skills than the industrial society. In *The Age of Unreason*, Charles Handy points out that by 2000, 80 percent of all jobs in the U.S. will require cerebral skills rather than manual skills. Handy also emphasizes the rapid pace of change and discontinuity brought about by this new age of readily accessible information.

Based on interviews with senior executives of California's largest employers in banking, manufacturing, and telecommunications, the skills and attributes they will require of their future work force include: the ability to communicate; computer literacy; human interaction skills; and flexibility, or the ability to handle stressful situations and respond to a rapidly changing environment. The increasing reliance on computer technology will continue to stretch the capabilities of the work force. Needs range from highly technical people — systems and computing language programmers — to workers whose primary occupation is not computing, but who nevertheless use computers constantly in their daily lives. These people will continually seek ways to upgrade their computer skills throughout their productive life spans.

Flatter Organizational Structures

The emergence of the information society is also causing major transformations in corporate organization structures. Peter Drucker, Clark Professor of Social Science at Claremont College Graduate School, predicts that in 20 years, the typical large business will have fewer than half the layers of management than it does today. The old hierarchical structures included many layers of management necessary for the collection, processing, consolidation, interpretation, and monitoring of information. As technology makes information readily available throughout the corporation and society, this hierarchical structure becomes inefficient. Corporations, in search of a more flexible and efficient environment, are transforming themselves into flatter, leaner organizations built around the concepts of work teams and networks. Individual achievement and recognition is accomplished through cooperation and collaboration aimed at achieving common goals.

According to Tom Peters, best-selling author of *Thriving on Chaos*, the information society is characterized by "high information availability for all, efficient smaller-scale

units, coalitions and alliances of many equal partners — and the virtual absence of hierarchy as we've known it for thousands of years."

Increasingly, corporations are contracting out for work as needed rather than maintaining a steady work force through both high-volume and low-volume work periods. This transition will create the impetus for more professionals with specialized skills to go into business for themselves.

As corporations become less hierarchical, they are eliminating layers of middle management. This evolution leaves many mid-career middle managers without jobs. In order to rejoin the work force, many middle managers will seek to rechannel their careers. A consequence of more flexible corporate structures is the loss of loyalty between employers and employees. Greater job shifting will cause greater self-reliance on the part of the individual, placing a premium on knowledge and survival skills.

Multiple Careers

In her book *When Giants Learn to Dance*, Rosabeth Moss Kanter identifies an elemental change in the nature of the corporate career. She observes that "climbing the career ladder is being replaced by hopping from job to job. Reliance on organizations to give shape to a career is being replaced by reliance on self." Kanter ascribes these changes to organizational restructuring, increased reliance on alliances with subcontractors versus permanent employees, and the encouragement of entrepreneurship and innovation.

Increasingly, individuals are developing career "portfolios" of several careers with many different organizations throughout their working lives. The traditional model of an employee who remains with one corporation for an entire career is being replaced by a new model wherein individuals develop and market their skills through a sequence of jobs.

The Need for Lifelong Education

The information society is also characterized by rapid change. As information becomes universally available, decision making, research, communication, and analysis are all more inclusive, but also more complex. The pace of technological advancement escalates, demanding constant adaptation.

As the pace of change in any occupation increases, it becomes increasingly necessary for practitioners to engage in an ongoing learning process and periodically return to school

to supplement their skills and knowledge with the latest advancements in their field. This rapid pace of change, combined with the growing tendency for individuals to engage in multiple careers throughout their working lives, causes many to predict that the concept of the sabbatical, a mainstay of the academic profession, will become increasingly popular in other professions.

Charles Handy predicts that as careers become more variegated, "some will want to interweave their careers with periods of study." He further predicts that "we may see an increasing number of formal sabbatical opportunities within universities and business schools to take advantage of this new market."

These changes are creating a fundamental transformation in higher education. Education is becoming an integral and recurring part of the work experience, no longer viewed as a discrete function performed prior to the beginning of one's career.

Emerging Role for Higher Education

It is apparent that all four of these major occupational transitions are interrelated. The information society is shaping flatter organization structures. As business enterprises reshape themselves to be more flexible and efficient, turbulence in the work force is created. As more businesses contract for work on a seasonal basis, or for specific functions and activities, rather than maintaining a full-time work force, the traditional corporate career ladder within one organization is replaced by greater movement among organizations. The rapid pace of change created by the information society, combined with the trend toward multiple careers, leads to the need for ongoing educational experiences throughout people's working lives. The following section explores these interrelated transformations and shows how they help to define an emerging role for higher education. Among the emerging duties of institutions will be: to provide new entrants into the work force with the skills necessary to function in the information age; to give displaced workers and individuals in career transition the education needed to redirect their careers; and to provide formal sabbatical programs and other lifelong education programs for professionals.

Information Society

The majority of new entrants to the work force in the coming decade will not be prepared for the new jobs available in the information society. For example, women and minorities are projected to constitute 68 percent of all new entrants to the work force between 1988 and 2000, but many of them do not have the computer literacy and other technical skills required by most jobs in the information society. Colleges and universities have the opportunity to provide the skills that women and minorities will need in order to succeed in this new era of work.

Displaced Workers

As corporations adopt flatter organizational structures, many mid-career middle managers will lose their jobs. A good number of these managers will seek further education in order to rechannel their careers. These managers will pursue a variety of educational experiences, including professional certification in such areas as education, law, and medicine; or second degrees in such highly marketable areas as computer science, engineering, and health services. Colleges and universities can step in and provide these managers with the further education needed to rechannel their careers.

Many displaced workers will look for tailored programs aimed at their specific needs. They will expect a high level of personal attention, in a concentrated, focused learning environment. Frequently, they will have the financial resources from savings, employer severance allowances, or borrowing capacity to pay for the intensive learning experience.

Career Transition

Individuals will increasingly pursue multiple careers throughout their working lives. For example, one individual might work for a Fortune 500 corporation, go into business for herself, and work on a contractual basis for several small companies, all in the course of her working life. In order to move smoothly between these different phases, many individuals will seek further education. Colleges and universities have the opportunity to provide individuals with the education needed to transition effectively.

Often a basic component of the multiple career path process is the personal and job-related stress that follows frequent and dramatic change. Higher education institutions

have an excellent opportunity to offer training in human behavior, social sciences, and professional counseling; these fields are essential in order to successfully guide and support workers through times of stress and crisis.

People focused on career transition will frequently have the financial resources to afford the desired learning experiences. These individuals will be searching for educational experiences tailored to their specific interests, and ones that will yield optimal returns on their investments of time and energy.

Lifelong Education

The rapid pace of technological change and the tendency for individuals to engage in multiple careers throughout their working lives will make lifelong learning a necessity for most individuals in the work force. For some, lifelong learning will take the form of a periodic sabbatical for intensive study away from the work place. For others, educational opportunities may be offered in the work place. Many corporations have already developed contractual agreements with local institutions (frequently community colleges) to provide on-site educational services for their employees. Many of these programs lead to degrees or certificates.

As people become older and more successful, they have the desire, the time, and the financial resources to take advantage of learning opportunities that expand their intellectual horizons and stimulate their creativity. Tailored, personalized learning experiences focusing on the arts, international affairs, health sciences, psychology, and history will have special appeal to a growing older population — indeed, art appreciation seminars may replace aerobics classes as the "in" thing to do in the new decade.

Implications for Different Kinds of Institutions

Learning needs of adults are widely varied; not all educational needs are going to be served by all types of institutions. Higher education institutions will tend toward offering learning opportunities best suited to their unique characteristics, i.e., mission, location, and local market conditions. Institutions will continue the trend to differentiate themselves and stress their individual qualifications.

Below is a simplified and generalized set of trends and implications that may be expected for public four-year institutions, public two-year institutions, and private institutions.

Public Four-Year Institutions

- Increasing part-time enrollment
- Increasing ethnic diversity and foreign enrollment
- Increasing enrollment of women
- Greater demand for skill-building courses, such as communications, information technology, health services, and business
- Increased coordination with elementary and secondary education institutions
- Increased distance learning capabilities
- Increased contractual teaching relationships with businesses

Public Two-Year Institutions

- Increasing part-time enrollment
- Increasing ethnic diversity and foreign enrollment
- Increasing enrollment of women
- Greater demand for skill-building courses, such as communications, information technology, health services, and business
- Greater demand for English as a second language
- Greater flexibility in course scheduling
- Increased need to serve students who have not graduated from high school
- Provide outreach services in the community
- Develop contract instruction programs with local employers

Private Institutions

- Continue to develop individual market niches in the higher education market
- Develop direct relationships with businesses for work force training
- Offer more certification and licensing programs
- Increased importance of "brand loyalty," i.e., the development of ongoing educational experiences for alumni

- Begin to offer "warranties" on achievement upon graduation, in response to a more competitive environment
- Increased collaboration and cooperation with other academic institutions and businesses
- Increased focus on foreign enrollment and overseas campuses and contractual relationships with foreign universities
- Develop "special" relationships with feeder schools (high schools and community colleges)

Conclusion

ONE CANNOT OVEREMPHASIZE the impact that the demographic and work force trends will have on colleges and universities. The many factors facing higher education — some of which are new, some old — are converging to change the nature and scope of America's institutions forever. These trends present higher education with a major challenge: to transform itself in order to meet the needs of a changing society. The trends are causing a paradigm shift in America's conceptualization of higher education, and place a new emphasis on the meaning and interpretation of educational quality.

Challenges

These trends do more than provide opportunities for higher education institutions; they will naturally lead to fundamental changes in the services they provide. According to Professor Robert Reich, of the John F. Kennedy School of Government, Harvard University, the new economy will require that institutions "push responsibility downward toward teachers and students; invite continuous, incremental innovation at all levels; . . . and encourage flexibility."

Higher education is coming under accelerated pressure to help create a work force that makes the nation's economy more competitive internationally. According to Clark Kerr, "the push by national economic and political leaders for higher education to make a greater contribution to U.S. industrial competitiveness will also intensify, leading to more and better skills training and more and better research, particularly in applied areas."

These required changes in the nature of educational services present key challenges for those involved in higher education. Preparation of students for full participation in the future work force will require considerable innovation. For example, a banking executive interviewed for this report suggested that in order to prepare students for work in a rapidly changing environment, a course be designed which constantly changes in expectations and agenda throughout the semester.

A Paradigm Shift

Higher education leaders and policy makers historically have looked at the nature of higher education in retrospective terms, i.e., what has happened, rather than what can be expected. The speed at which the work force and demographics are changing is causing the need to quickly but substantively rethink the nature of the higher education enterprise.

The work force and demographic trends are causing a paradigm shift in higher education; it is moving from its historic identity as a provider of a discrete learning experience for young people, to a new identity as a provider of lifelong education to adults engaged in the work force.

In the new paradigm higher education is being viewed as an opportunity — and increasingly, an essential one — to stay abreast of changing demands and shifts in society and the work place. The majority of higher education consumers are minorities and women who have been previously underrepresented in educational attainment and earning power in the work force. Attendance is becoming part-time, intermittent, and occurring over most of one's adult life. Academic objectives include self-actualization as well as career development.

The Emphasis on Quality

Along with this paradigm shift in higher education comes a new look at the quality of the service provided. Students have many alternatives for lifelong learning, including in-house programs developed by corporations, courses offered through video technology, and other unconventional alternatives to colleges and universities. Increased competition will force higher education institutions to emphasize the relationship between the value of the services they offer and their fees.

"Quality" education in this context refers to the perceived value as defined by the learner. Features such as ease of scheduling, transportation, location, and influence on job qualifications, promotions, bonuses, and salary increases help define the learner's concept of quality educational services. Students may look for guarantees that colleges and universities can meet their educational needs. In response, colleges and universities may begin to offer warranties on their services, and even go so far as to offer "money back

guarantees" in which students pay tuition only upon evidence of their acquiring the knowledge and skills that they sought upon enrollment.

The concept of warranties is already being proposed by some education administrators. Joseph Fernandez, chancellor of the New York City public school system, has proposed placing warranties on the students that New York's high schools graduate. Under the plan, if an employer found that a high school graduate could not read, write, or calculate proficiently, the employee could be returned to school within a year for remedial programs at no cost to the employer. Although this proposed plan is for secondary education, the concept is equally applicable to higher education.

Recommendations for Managing Higher Education

THE DEMOGRAPHIC AND WORK FORCE INFLUENCES in the 1990s continue to shape college and university teaching, support services, and management. In many ways the adjustment happens naturally as the free market characteristics of supply and demand come together. For example, community colleges have offered learning instruction opportunities to employees under programs subsidized and sponsored by their employers.

As institutions adapt to take advantage of new education opportunities, four strategies are emerging that bear discussion.

Strategy One: Increase Quality of Services

In a free market environment, clients have the power to define quality and value. Starting with the premise that value of education services are measured by those who receive them, several specific actions are recommended:

- Include ongoing market demand research as part of the institution's planning process. Understand local labor market conditions. Look to status of work force preparedness, occupational demand shifts, and displaced worker population as key indicators of work force stability. Develop specific goals aimed at work force education and skill building, and measure accomplishments.
- Collaborate with employers to jointly sponsor and deliver learning programs. Understand and document the needs of employers. Develop programs tailored to, and financed by, employees and employers.
- Survey current students to better understand educational needs and goals. Run focus group discussions with students to explore ways to increase the value of the learning

experience. Identify specific impediments limiting access to education, such as transportation, dependent care, and time constraints.

- Explore demand for individualized and tailored learning and counseling programs that would appeal to older students who are capable and willing to pay for the personal service.
- Create multicultural community task forces to study special educational needs of diverse populations.
- Investigate ways to repackage classes in a format more attractive to older students. Examples include certificate programs of achievement in the arts, international affairs, social sciences, and history. Expand use of executive management programs aimed at achieving increased technical, professional, and managerial skills.
- Study ways that warranties may be introduced into the academic program as a means of increasing value to students and employers.

The underlying motive of the above recommended actions is for educational institutions to become aggressively aware and knowledgeable of the educational needs of the employers and employees within their market. Once the needs are determined, decision makers must evaluate how to best meet the needs of the marketplace based on their institution's strengths. Collaborative programs with businesses and focused instruction tailored to the needs of the employees can then be developed and implemented. Educational services take on increased value when they are tailored to the particular needs of individual learners.

Strategy Two: Increase Use of Technology and Communications

This report describes the impact technology and communications trends are having on the U.S. economy and society. Higher education institutions are one of the many sectors undergoing fundamental change in these areas.

Recommended actions regarding technology and communications specifically focused on the education of the work force follow.

- Increase the use of distance learning through use of teleconferencing, interactive television, and video CDs, cassettes, and tapes.
- Implement electronic communications networks on campus that reduce paper flow and streamline transaction processing for such activities as registration, course scheduling, purchasing, payroll processing, and other financial transactions.
- Improve the quality of campus telephone systems to increase the effectiveness of service to clients, and to take advantage of increased productivity through better communications.
- Implement support systems that link all workers in the organization and provide improved useful management information to all employees.
- Implement market survey information systems that sample educational needs and satisfaction levels of current students and test the marketplace to assess new and emerging educational service needs.
- Improve and use cost information to better understand relationships of marginal costs and revenues of academic programs and support services. Use cost information as an important factor in determining which educational market opportunities to pursue and how to price them.

Historically, impediments to the advancement of technology and communication systems have been due to a lack of funding for development, start up, and training.

Frequently, higher education's investments in technology and communications have been underfunded, and insufficient professional, technical, managerial, and training resources have been allocated to the projects. A major cause for underfunding these projects is that they have to be digested as part of the ongoing operating budget. This puts them in severe competition with faculty salaries, rising utility costs, and other high-priority, fixed cost items.

Institutional leaders need to regard technology and communications development projects as capital investments, similar to construction and other plant related items. Costs can be amortized and debt financed, if necessary, with debt service costs then charged to the operating budget.

Strategy Three: Increase Labor Productivity and Efficiency

Changes in the work force regarding productivity improvements have far-reaching impact on colleges and universities. Higher education is not exempt from the changing work force demographics, organizational restructuring, and shifts in occupations.

Underlying the changes in the work force in the 1990s is the need to find increased labor productivity and worker efficiency. Recommendations for college and university managers in this area are to:

- Develop ongoing training programs aimed at upgrading skills of all institutional employees. Focus on reducing error rates, increasing accuracy, eliminating ambiguous policies and procedures, clarifying work rules, and reinforcing the importance of high-quality service.
- Develop crosstraining and multitask skill-building programs. Concentrate on organizing collaborative work groups and developing employees with a wide variety of skills.
- Provide adequate training and systems support, and then give more authority, responsibility, and accountability to the individuals in direct contact with clients — secretaries, clerks, receptionists, financial aid officers, purchasing agents.
- Provide adequate training and systems support, and then give more responsibility, authority, and accountability to the individuals making line decisions — hiring, purchasing, admitting, fund raising, financial controlling.
- Focus increased attention on retaining and serving existing clients through such programs as retention (students), career development (employees), and alumni relations (graduates and donors).

The underlying theme of the above recommendations is to move toward a performance-based management process that measures output results and is aimed at optimizing scarce labor and capital resources.

Strategy Four: Reduce Administrative and Support Costs

The final strategy is really the end result of the three described previously. Administrative costs need to be reduced for the same reasons that other business enterprises in

America's economy are reducing overhead, eliminating unnecessary bureaucratic management levels, and downsizing operations: they are seeking to become more competitive and trying to increase the value/cost ratio of their goods and services.

Since the 1960s, most higher education institutions have steadily increased administrative and support services. The administrative "lattice" phenomenon described by Drs. William Massy and Robert Zemsky in the *Policy Perspectives* series of the Pew Charitable Trusts describes administrative build-up that has been allowed to happen. The lattice "endlessly extend[s] itself in response to an environment of regulation and micro-management, of administration becoming a goal in itself, and of a commitment to consensus management that too often made higher education risk-averse."

Reducing administrative costs cannot be achieved unilaterally. Rather, cost reduction must be accomplished as the result of many other programmatic decisions. The following approach is recommended as one method of reducing administrative costs in a systematic manner:

- Examine and redefine the basic, minimum support services that must be provided to serve clients and achieve required regulatory compliance. Use client focus groups. Identify optional services that can be provided on a fee basis, and price accordingly.
- Implement an ongoing technological and communications development program aimed at consolidating transaction processing steps, implementing broadly accessed communication and decision support systems, and facilitating ongoing training and skill building.
- Restructure roles and responsibilities to place authority for decisions at the client level, eliminating multilevel approval processing.
- Reorganize administrative and support activities to be focused on the client, rather than on the process. Examples include consolidation of student services (admission, registration, financial aid, student billing, counseling and advising, and alumni relations) and business services (procurement, accounting, payroll, financial reporting) so that employees working in multifunctional teams are trained to carry out a multitude of activities.
- Contract services that are highly specialized or can be provided on a value-to-cost basis that is more economical than can be provided internally. Typical examples have included investment management, food service, and janitorial service. Other services

to consider include financial aid administration, accounting, security, environmental health and safety, commodities purchasing, recruitment, and data processing.

For colleges and universities to reduce administrative support costs and, at the same time, increase the quality of services to clients is frequently seen as a non sequitur. Many administrators have been trained to believe that improved service is achieved through expending more resources, i.e., hiring more people. As higher education moves through the 1990s, there will be many opportunities to see that improved services are often achieved through better use of fewer resources.

References

Drucker, P. January–February 1988. The Coming of the New Organization. *Harvard Business Review*. Vol. 66: 45–53.

Handy, C. 1990. *The Age of Unreason*. Cambridge, MA: Harvard Business School Press.

Hudson Institute. 1985. *Workforce 2000: Work and Workers for the 21st Century*.

Kanter, R.M. 1989. *When Giants Learn to Dance*. NY: Simon & Schuster.

Kerr, C. Summer 1990. "Higher Education Cannot Escape History: The 1990's." *New Directions for Higher Education: An Agenda for the New Decade*. Edited by L. Jones, and F. Nowotny. San Francisco: Jossey-Bass, Inc.

Levine, A. 1989. *Shaping Higher Education's Future: Demographic Realities and Opportunities, 1990–2000*. San Francisco: Jossey-Bass, Inc.

Mandel, M. May 1, 1989. The High Cost of Not Going to College. *Business Week*, p. 20.

Massy, W.F., and R. Zemsky. June, 1990. The Lattice and the Ratchet. *Policy Perspectives*. Higher Education Research Program sponsored by the Pew Charitable Trusts. Vol. 2:4.

Naisbitt, J. 1985. *Reinventing the Corporation: Transforming Your Job and Your Company for the New Information Society*. NY: Warner Books.

Nolan, R. Winter 1990. Too Many Executives Today Just Don't Get It! *Cause/Effect*, pp. 5–15.

Peters, T. August 15, 1988. The Destruction of Hierarchy. *Industry Week*, pp. 33–35.

Reich, R. 1988. *Education and the Next Economy*. Washington, D.C.: National Education Association.

Silverstri, G., and J. Lukasiewicz. November 1989. Projections of Occupational Employment, 1988–2000. U.S. Department of Labor, *Monthly Labor Review*.

Stewart, T. January 14, 1991. Now Capital Means Brains, Not Just Bucks. *Fortune*, pp. 30–62.

Stout, H. December 7, 1990. U.S. Universities Failing to Educate Minority Students. *Wall Street Journal*, p. A6.

Toffler, A. 1990. *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*. NY: Bantam Books.

U.S. Department of Labor, Bureau of Labor Statistics. *Outlook 2000*. Bulletin 2352.

Weiss, S. January 23, 1991. University Plans to Toughen its Standards for Graduation. *New York Times*, p. A16.

Appendix

Figure A-1

Total Population, Including Armed Forces Overseas (In Thousands)

		Age Group										
July 1	Total	0-4	5-17	18-19	20-21	18-21	22-24	18-24	25-29	30-34	35-64	65 +
1970	205,052	17,166	52,596	7,509	7,209	14,718	9,993	24,711	13,736	11,587	65,149	20,107
1971	207,661	17,244	52,564	7,714	7,350	15,064	10,810	25,874	14,041	11,917	65,460	20,561
1972	209,896	17,101	52,319	7,924	7,593	15,517	10,560	26,077	15,240	12,383	65,757	21,020
1973	211,909	16,851	51,914	8,114	7,796	15,910	10,725	26,635	15,786	13,153	66,045	21,525
1974	213,854	16,487	51,500	8,258	8,004	16,262	10,972	27,234	16,521	13,704	66,348	22,061
1975	215,973	16,121	51,045	8,479	8,196	16,675	11,331	28,006	17,280	14,191	66,632	22,696
1976	218,035	15,617	50,635	8,659	8,336	16,995	11,649	28,644	18,274	14,485	67,101	23,278
1977	220,239	15,564	49,899	8,674	8,550	17,224	11,949	29,173	18,277	15,721	67,713	23,892
1978	222,585	15,735	49,039	8,676	8,760	17,406	12,216	29,622	18,683	16,280	68,723	24,502
1979	225,055	16,063	48,043	8,751	8,754	17,505	12,542	30,047	19,178	17,025	69,566	25,134
1980	227,757	16,458	47,238	8,766	8,765	17,531	12,819	30,350	19,804	17,822	70,383	25,704
1981	230,138	16,931	46,354	8,607	8,825	17,432	12,996	30,428	20,306	18,853	71,029	26,236
1982	232,520	17,298	45,655	8,476	8,807	17,283	12,999	30,282	20,865	18,876	72,716	26,827
1983	234,799	17,650	45,129	8,243	8,648	16,891	13,053	29,944	21,321	19,281	74,046	27,428
1984	237,001	17,830	44,943	7,855	8,514	16,369	13,021	29,390	21,660	19,769	75,436	27,973
1985	239,283	18,017	44,975	7,535	8,278	15,813	12,936	28,749	21,891	20,346	76,770	28,536
1986	241,596	18,128	45,143	7,360	7,892	15,252	12,721	27,973	22,136	20,848	78,195	29,173
1987	243,084	18,866	44,595	7,247	7,463	14,710	12,535	27,245	22,151	20,941	79,361	29,925
Projected												
1988	245,302	19,029	44,616	7,445	7,264	14,709	12,075	26,784	22,088	21,341	80,918	30,529
1989	247,498	19,142	44,683	7,555	7,273	14,828	11,547	26,375	21,925	21,695	82,563	31,115
1990	249,657	19,198	45,139	7,214	7,470	14,684	11,110	25,794	21,522	22,007	84,300	31,697
1991	251,767	19,192	45,741	6,754	7,580	14,334	11,003	25,337	20,826	22,333	86,117	32,217
1992	253,817	19,124	46,487	6,523	7,240	13,763	11,117	24,880	20,229	22,319	88,089	32,688
1993	255,800	18,998	47,169	6,482	6,782	13,264	11,319	24,583	19,573	22,257	90,090	33,129
1994	257,714	18,823	47,907	6,503	6,551	13,054	11,085	24,139	19,059	22,097	92,182	33,507
1995	259,559	18,615	48,517	6,560	6,509	13,069	10,633	23,702	18,822	21,698	94,317	33,888
1996	261,339	18,390	49,111	6,660	6,531	13,191	10,059	23,250	18,826	21,007	96,561	34,193
1997	263,060	18,166	49,529	6,786	6,587	13,373	9,905	23,278	18,603	20,414	98,680	34,389
1998	264,731	17,957	49,695	7,129	6,688	13,817	9,810	23,627	18,348	19,763	100,754	34,586
1999	266,360	17,774	49,780	7,371	6,814	14,185	9,942	24,127	17,886	19,254	102,804	34,737
2000	267,955	17,626	49,764	7,456	7,156	14,612	9,988	24,600	17,396	19,019	104,627	34,921
2005	275,677	17,449	48,533	7,868	7,761	15,629	11,352	26,981	17,403	17,606	111,477	36,227
2010	283,238	17,974	46,870	7,798	7,931	15,729	11,926	27,655	19,362	17,616	114,568	39,195
2015	290,406	18,443	46,683	7,354	7,553	14,907	11,730	26,637	20,102	19,564	114,180	44,796

Sources: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract.

U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States, by Age, Sex, and Race: 1988 to 2080*, Series P-25, Number 1018 (January 1989).

Figure A-2
State Population Projections
1980-2000

States by Region	Population in Thousands			Increase in Thousands		Percent Increase	
	1980	1990	2000	1980-1990	1990-2000	1980-1990	1990-2000
United States	226,546	249,891	267,748	23,345	17,857	10.3	7.1
New England							
Maine	1,125	1,236	1,344	111	108	9.9	8.7
New Hampshire	921	1,140	1,410	219	270	23.8	23.7
Vermont	511	571	619	60	48	11.7	8.4
Massachusetts	5,737	5,921	6,159	184	238	3.2	4.0
Rhode Island	947	998	1,048	51	50	5.4	5.0
Connecticut	3,107	3,266	3,422	159	156	5.1	4.8
Middle Atlantic							
New York	17,558	17,868	17,966	310	98	1.8	0.5
New Jersey	7,365	7,808	8,382	443	574	6.0	7.4
Pennsylvania	11,864	12,043	12,069	179	26	1.5	0.2
East North Central							
Ohio	10,978	10,907	10,930	109	23	1.0	0.2
Indiana	5,490	5,617	5,696	127	79	2.3	1.4
Illinois	11,426	11,682	11,722	256	40	2.2	0.3
Michigan	9,262	9,292	9,365	30	73	0.3	0.8
Wisconsin	4,706	4,892	4,844	186	(48)	4.0	(1.0)
West North Central							
Minnesota	4,076	4,377	4,566	301	189	7.4	4.3
Iowa	2,914	2,814	2,549	(100)	(265)	(3.4)	(9.4)
Missouri	4,917	5,207	5,473	290	266	5.9	5.1
North Dakota	653	658	596	5	(62)	0.8	(9.4)
South Dakota	691	716	715	25	(1)	3.6	(0.1)
Nebraska	1,570	1,604	1,539	34	(65)	2.2	(4.1)
Kansas	2,364	2,522	2,534	158	12	6.7	0.5

Figure A-2
State Population Projections
1980-2000
(continued)

States by Region	Population in Thousands			Increase in Thousands		Percent Increase	
	1980	1990	2000	1980-1990	1990-2000	1980-1990	1990-2000
South Atlantic							
Delaware	594	682	802	88	120	14.8	17.6
Maryland	4,217	4,774	5,608	557	834	13.2	17.5
District of Columbia	638	603	595	(35)	(8)	(5.5)	(1.3)
Virginia	5,347	6,229	7,275	882	1,046	16.5	16.8
West Virginia	1,950	1,842	1,651	(108)	(191)	(5.5)	(10.4)
North Carolina	5,882	6,688	7,717	806	1,029	13.7	15.4
South Carolina	3,122	3,560	3,962	438	402	14.0	11.3
Georgia	5,463	6,598	8,005	1,135	1,407	20.8	21.3
Florida	9,746	12,942	16,315	3,196	3,373	32.8	26.1
East South Central							
Kentucky	3,661	3,745	3,689	84	(56)	2.3	(1.5)
Tennessee	4,591	5,009	5,424	418	415	9.1	8.3
Alabama	3,894	4,165	4,358	271	193	7.0	4.6
Mississippi	2,521	2,649	2,772	128	123	5.1	4.6
West South Central							
Arkansas	2,286	2,421	2,509	135	88	5.9	3.6
Louisiana	4,206	4,368	4,141	162	(227)	3.9	(5.2)
Oklahoma	3,025	3,190	2,924	165	(266)	5.5	(8.3)
Texas	14,229	17,053	17,828	2,824	775	19.8	4.5
Mountain							
Montana	787	797	744	10	(53)	1.3	(6.6)
Idaho	944	1,013	1,008	69	(5)	7.3	(0.5)
Wyoming	469	468	409	(1)	(59)	(0.2)	(12.6)
Colorado	2,890	3,331	3,424	441	93	15.3	2.8
New Mexico	1,303	1,539	1,735	236	196	18.1	12.7
Arizona	2,718	3,666	4,633	948	967	34.9	26.4
Utah	1,461	1,729	1,845	268	116	18.3	6.7
Nevada	800	1,130	1,409	330	279	41.3	24.7
Pacific							
Washington	4,132	4,797	5,191	665	394	16.1	8.2
Oregon	2,633	2,822	2,903	189	81	7.2	2.9
California	23,668	29,287	33,963	5,619	4,676	23.7	16.0
Alaska	402	525	599	123	74	30.6	14.1
Hawaii	965	1,133	1,362	168	229	17.4	20.2

Sources: 1980: 1980 Census, PC80-S1-7, Total Persons

1990: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Projection of the Population of the United States, by Age, Sex, and Race: 1988 to 2080*, Series P-25, Number 1053 (January 1990).

Figure A-3

College Enrollment, By Age
(In Thousands)

	1970	1975	1980	1985	1986	1987	1988
Total	**8,581**	**11,185**	**12,097**	**12,247**	**12,505**	**12,719**	**13,116**
14-17	259	278	247	235	200	239	182
18-19	2,600	2,786	2,901	2,600	2,727	3,045	3,046
20-21	1,880	2,243	2,423	2,383	2,206	2,642	2,681
22-24	1,457	1,754	1,989	1,933	2,100	2,006	2,064
25-29	1,074	1,774	1,871	1,953	1,941	1,826	1,735
30-34	487	967	1,243	1,261	1,301	1,159	1,228
35+	823	1,383	1,422	1,885	2,030	1,802	2,179

	1970	1975	1980	1985	1986	1987	1988
Total Percentage	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
14-17	3.0	2.5	2.0	1.9	1.6	1.9	1.4
18-19	30.3	24.9	24.0	21.2	21.8	23.9	23.2
20-21	21.9	20.1	20.0	19.5	17.6	20.8	20.4
22-24	17.0	15.7	16.4	15.8	16.8	15.8	15.7
25-29	12.5	15.9	15.5	15.9	15.5	14.4	13.2
30-34	5.7	8.6	10.3	10.3	10.4	9.1	9.4
35+	9.6	12.4	11.8	15.4	16.2	14.2	16.6
18-21	52.2	45.0	44.0	40.7	39.4	44.7	43.7
18-24	69.2	60.6	60.5	56.5	56.2	60.5	59.4

Note: details may not add to totals due to rounding.

Sources: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 169

U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment — Social and Economic Characteristics of Students: 1988 and 1987*, Series P-20, Number 443, and earlier numbers including 319, 333, 346, 360, 362, 400, and 429.

Figure A-4
College-Going Rates
By Age, Race, and Gender

Percentage of Group Attending College

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
All													
14-15	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2		
16-17	3.3	3.2	3.3	3.7	3	2.8	3.2	3.5	3.4	3.4	2.8	3.2	2.5
18-19	36	35.7	35.6	34.6	35.9	37.5	36.5	37.6	38.6	40.4	41.5	42.5	41.8
20-21	30.7	30.4	28.4	29.1	29.9	30.4	32.9	31	32.6	34.1	31.8	37.3	38.5
22-24	16.8	16.1	15.8	15.4	15.8	15.9	16.3	16.1	16.8	16.5	17.5	17.1	18
25-29	9.8	10.5	9.2	9.3	8.9	8.7	9.2	9.3	8.8	9	8.5	8.6	8.2
30-34	5.7	6.5	6.1	6.1	6.2	6.6	6.1	6.2	6	5.9	5.7	5.5	5.7
35-44												3.8	4.5
45-54												1.5	2
55+												0.3	0.3
White Men													
14-15	0.1			0.3	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	
16-17	2.4	2.5	2.5	2.9	2.3	2.4	2.9	2.8	2.4	3.6	2.4	3.1	1.6
18-19	36.7	37.5	36.4	34.6	36.2	37.5	36	37.2	40.2	40	43	43.4	40.1
20-21	32.9	33.7	31.3	31.3	32.9	31.9	35.7	35	35.3	36.3	32.9	40.6	40
22-24	20.2	18.9	18.8	17.5	17.7	18.7	17.7	18.7	19.9	18.7	18.4	18.2	20.6
25-29	12.7	12.3	10.8	10.3	9.3	8.9	9.8	10.1	9.1	9.3	9.3	8.3	7.7
30-34	6.3	6.6	6.1	5.7	5.5	5.8	5.3	5.3	5.4	5.4	5.2	4.9	5.2
35-44												2.9	3.2
45-54												0.8	1.1
55+												0.2	0.2
White Women													
14-15	0	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.2		
16-17	4.2	3.8	4	4.3	3.9	3.4	3.8	4.1	4.6	3.7	3.5	3.3	3.1
18-19	37.5	36.8	37.3	37	38.4	40.1	40.4	43.3	42.6	45.7	43.7	44.4	48.1
20-21	30.1	27.8	26.4	28.9	28.8	31.4	32.8	29.3	31.6	34	32.3	36.4	39.2
22-24	13.6	13	12.6	13.5	14.4	12.9	14.1	13.2	13.8	14.6	15.9	15.9	16.2
25-29	6.8	8.4	7.6	8.7	8.4	7.6	8.7	8.3	8.6	8.7	7.8	8.2	8.2
30-34	4.6	5.8	5.7	6.4	6.8	7.3	6.5	6.7	6.5	6.6	6.1	6.2	6.1
35-44												4.8	5.8
45-54												2.2	3
55+												0.4	0.3

Figure A-4
College-Going Rates
By Age, Race, and Gender

(continued)

Percentage of Group Attending College

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Black Men													
14-15										0.8			
16-17	1.9	3.1	2.3	2.1	2.4	1.2	1.7	2.2	2.9	1	1.8	2.3	1.1
18-19	24.2	18.1	23.1	22.1	19.6	24.8	22.7	17.3	21.3	23.3	23.4	30.8	21.1
20-21	24.8	25.6	23.1	24	21.7	18.6	18.1	21.5	25	28	22.8	26.7	20
22-24	17.7	17.8	14	13.5	12.4	14.4	15.7	16.8	16.4	11.9	15.8	14.1	14.3
25-29	11	11.9	9.4	8	9.9	10.8	8.4	8.2	8.5	5.5	6.6	8.3	6.2
30-34	8.8	9.2	7.3	6.1	6.6	6.5	5.6	6.7	6.2	3.9	5.5	3.2	4.1
35-44												2.6	2.9
45-54												1.6	1.1
55+												0.1	0.3
Black Women													
14-15	0.2					0.3	0.2		0.3	0.2	0.3		
16-17	3.8	3.2	4.3	5.3	2.8	3.9	2	3.5	4.2	1.9	1.4	3.5	4.8
18-19	32.6	31.1	27.2	29.4	31.9	29.2	25.1	27.6	27	24.9	34.7	34.4	31.7
20-21	25	26.5	23.7	20.3	21.8	23.2	25.2	22.4	24.2	23.1	23	25.9	34.3
22-24	13.9	11.9	13.3	13.7	12.6	13.1	15.3	13.1	13.6	13.5	16.7	14	11.9
25-29	7.9	10.2	7.8	6.9	7.1	8	7.8	6.4	5.9	8.3	7	8.3	7.7
30-34	6.3	8.5	7.5	6.9	5.9	6.8	8.1	7.4	5.5	5.6	5.8	6.1	6.7
35-44												3.6	4.8
45-54												1.1	2.3
55+												0.2	0.2

Figure A-4
College-Going Rates
By Age, Race, and Gender

(continued)

Percentage of Group Attending College

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Hispanic Men													
14-15							0.2				0.6		
16-17	1.3	2.3	2.5	3.3	0.6	1.7	1.5	3.7	0.8	2.9	1.4	0.8	2.8
18-19	26.7	22.5	24.1	26.1	22.1	19.8	17.3	15.3	16.9	16.2	26.6	22.9	20.5
20-21	19.4	20.1	13.8	18.8	18.8	21.2	18.4	19.5	24.1	19.4	16.4	26.5	19
22-24	17.3	13.6	12.5	12.4	8.8	10.2	10.8	12.7	11	12.3	11.7	11.4	12.5
25-29	10.4	12.4	9.5	7.9	6.2	7.5	7.1	10.2	6.6	7.9	7.7	7.4	4.5
30-34	5.6	5.8	3.5	5.6	5.6	5.8	3.6	2.8	4.6	4	3.1	4.6	3.2
35-44												1.7	2.5
45-54													0.6
55+													0.6
Hispanic Women													
14-15													
16-17	3.6	3.3	3.4	4	2.8	3.2	3.6	2.5	1.1	1.8	1.6	1.7	1.3
18-19	26.9	25.2	21.7	22.9	23.8	22.5	30.7	30.4	30.2	27.8	27.3	20.6	34.7
20-21	19.3	20.6	14.3	18.8	14.4	16.8	21.5	21	26.3	25.2	20.6	18.8	10
22-24	12.1	5.7	9.2	7.6	12.1	12.1	9.7	9.3	9	9.7	12.5	12.9	10.9
25-29	4.2	4.9	5.5	6	5.1	7.1	6.4	5.4	6.7	4.3	8.2	5.9	6.7
30-34	2.4	4.7	3.4	5.7	3.8	2.8	4.4	3.6	4.9	6.7	5.3	3.3	4.9
35-44												3.1	3
45-54												1.2	0.5
55+												0.1	0.6

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *School Enrollment — Social and Economic Characteristics of Students: 1988 and 1987*, Series P-20, Number 443, and earlier numbers including 319, 333, 346, 360, 362, 400, and 429.

Figure A-5
Trends in the Distribution of Families, By Type of Family (In Thousands)

Year	All Families	Married Couples			Male Householder, No Wife Present	Female Householder, No Husband Present
		All Couples	Wife In the Paid Labor Force	Wife Not in Paid Labor Force		
1967	50,111					
1968	50,823					
1969	51,586					
1969 *	51,948	44,739	17,568	27,174	1,258	5,950
1970	52,227					
1971	53,296					
1972	54,373					
1973	55,053					
1974	55,698	47,069	20,404	26,665	1,399	7,230
1975	56,245	47,318	20,833	26,486	1,444	7,482
1976	56,710					
1977	57,215					
1978	57,804					
1979	59,550	49,112	24,187	24,925	1,733	8,705
1980	60,309	49,294	24,752	24,542	1,933	9,082
1981	61,019	49,630	25,002	24,628	1,986	9,403
1982	61,393	49,908	25,480	24,428	2,016	9,469
1983	62,015	50,090	26,177	23,913	2,030	9,878
1984	62,706	50,350	26,938	23,412	2,228	10,129
1985	63,558	50,933	27,489	23,445	2,414	10,211
1986	64,491					
1987	65,204	51,675	29,010	22,664	2,834	10,696
1988	65,837	52,100	29,713	22,387	2,847	10,890
1989	66,090	52,317	30,188	22,129	2,884	10,890
Percent Change:						
1969-89	27.2	16.9	71.8	(18.6)	129.3	83.0
Percent Distribution:						
1969	100.0	86.1	33.8	52.3	2.4	11.5
1989	100.0	79.2	45.7	33.5	4.4	16.5

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, *Consumer Income, Money Income and Poverty Status in the United States*, Numbers 154 and 168.

*Population figures differ slightly between census reports.

Figure A-6
Number of Immigrants
1945 - 1988

Year	Europe	Asia	Africa	Caribbean	Central America & Mexico	South America	Other	Total	Non legalization
1945	10,093	623	267	4,668	9,850	1,326	11,292	38,119	
1946	64,798	2,000	1,098	4,911	8,976	1,755	25,183	108,721	
1947	96,874	4,089	849	6,323	11,245	2,421	25,491	147,292	
1948	115,705	7,671	840	7,024	11,614	2,768	24,948	170,570	
1949	138,356	6,300	737	6,550	10,470	2,639	23,265	188,317	
1950	206,420	4,742	689	6,104	8,992	2,777	19,463	249,187	
1951	161,065	5,278	700	5,573	8,342	2,724	22,035	205,717	
1952	202,749	9,563	740	6,738	12,242	3,902	29,586	265,520	
1953	96,082	8,124	922	8,886	21,510	4,691	30,219	170,434	
1954	110,944	12,034	1,187	9,008	40,944	5,523	28,537	208,177	
1955	127,286	12,337	1,186	12,513	54,455	5,599	24,414	237,790	
1956	175,119	17,974	1,441	19,030	70,028	6,846	31,187	321,625	
1957	184,656	23,561	1,673	18,063	54,934	9,002	34,978	326,867	
1958	137,796	20,382	2,040	16,773	33,285	11,039	31,950	253,265	
1959	157,733	24,602	2,631	12,224	28,869	9,792	24,835	260,686	
1960	138,785	24,956	2,319	14,059	39,345	13,048	32,886	265,398	
1961	126,979	22,299	1,980	22,266	48,449	15,470	33,901	271,344	
1962	118,778	23,019	1,931	26,484	63,696	17,592	32,236	283,736	
1963	124,677	25,021	2,639	27,617	65,528	22,919	37,859	306,260	
1964	122,104	21,845	2,887	29,969	44,467	31,102	39,874	292,248	
1965	113,424	20,683	3,383	37,592	50,392	30,962	40,261	296,697	
1966	123,469	41,432	3,137	43,820	54,821	25,836	30,525	323,040	
1967	137,301	61,446	4,236	65,278	51,080	16,517	26,114	361,972	
1968	137,754	58,989	5,078	145,762	54,426	21,967	30,472	454,448	
1969	118,028	75,679	5,876	59,401	54,316	23,928	21,351	358,579	
1970	116,039	94,883	8,115	61,406	53,821	21,973	17,089	373,326	
1971	96,498	103,459	6,772	68,189	58,733	20,702	16,125	370,478	
1972	89,993	121,058	6,612	61,373	72,150	19,359	14,140	384,685	
1973	92,870	124,160	6,655	64,769	78,983	20,335	12,291	400,063	
1974	81,212	130,662	6,182	62,959	80,823	22,307	10,716	394,861	
1975	73,996	132,469	6,729	67,430	71,901	22,984	10,685	386,194	

Figure A-6
Number of Immigrants
1945 - 1988

(continued)

Year	Europe	Asia	Africa	Caribbean	Central America & Mexico	South America	Other	Total	Non legalization
1976	72,411	149,881	7,723	66,839	67,776	22,699	11,284	398,613	
1977	70,010	157,759	10,155	114,011	60,564	32,954	16,862	462,315	
1978	73,198	249,776	11,524	91,361	112,520	41,764	21,299	601,442	
1979	60,845	189,293	12,838	74,074	69,643	35,344	18,311	460,348	
1980	72,121	236,097	13,981	73,296	77,648	39,717	17,779	530,639	
1981	66,695	264,343	15,029	73,301	125,777	35,913	15,542	596,600	
1982	69,174	313,291	14,314	67,379	79,732	35,448	14,793	594,131	
1983	58,867	277,701	15,084	73,306	83,680	36,087	15,038	559,763	
1984	64,076	256,273	15,540	74,265	81,645	37,460	14,644	543,903	
1985	63,043	264,691	17,117	83,281	57,379	39,058	45,440	570,009	
1986	62,512	268,248	17,463	101,632	94,913	41,874	15,066	601,708	
1987	61,174	257,684	17,724	102,899	101,647	44,385	16,003	601,516	
1988	64,797	264,465	18,882	112,357	125,214	41,007	16,303	643,025	574,024
1989	82,891	312,149	25,166	88,932	506,206	58,926	16,654	1,090,924	598,724

Source: U.S. Immigration and Naturalization Service, special computer runs.

Figure A-7

Total Foreign Student Enrollment

1955 - 1988

Academic Year	IIE Foreign Student Enrollment	USED Non-Resident Alien
1954-55	34,000	
1955-56	36,000	
1956-57	41,000	
1957-58	43,000	
1958-59	47,000	
1959-60	48,000	
1960-61	53,000	
1961-62	58,000	
1962-63	65,000	
1963-64	75,000	
1964-65	82,000	
1965-66	83,000	
1966-67	100,000	
1967-68	110,000	
1968-69	121,000	
1969-70	135,000	
1970-71	145,000	
1971-72	140,000	

Academic Year	IIE Foreign Student Enrollment	USED Non-Resident Alien
1972-73	146,000	
1973-74	151,000	
1974-75	155,000	
1975-76	179,344	
1976-77	203,068	219,000
1977-78	235,509	
1978-79	263,938	253,000
1979-80	286,343	
1980-81	311,882	305,000
1981-82	326,299	
1982-83	336,985	331,000
1983-84	338,894	
1984-85	342,113	335,000
1985-86	343,777	
1986-87	349,609	345,000
1987-88	356,187	
1988-89	366,350	361,000
1989-90	387,850	

Source: Institute for International Education, *Open Doors*, Annual issues, New York, New York.

U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics: 1990*, p. 192 and unpublished data.

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